CDC PUBLIC HEALTH GRAND ROUNDS

Shifts in Global Health Security: Lessons from Ebola

September 29, 2015

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Ebola Successes and Challenges and What They Mean for Future Health Security Threats

Jennifer B. Nuzzo, DrPH, SM
Senior Associate
UPMC Center for Health Security

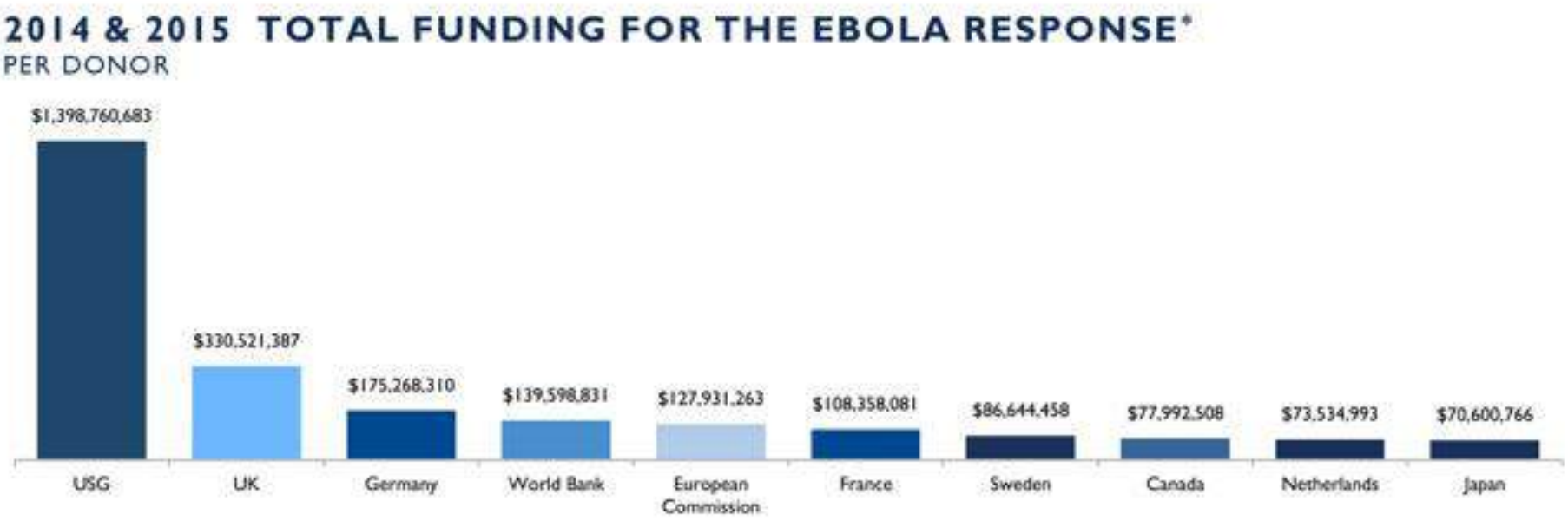
UPMC CENTER FOR HEALTH SECURITY

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Successes of Ebola Response

time.com/

U.S. Leadership in Global Response
Total Funding Commitments for Ebola

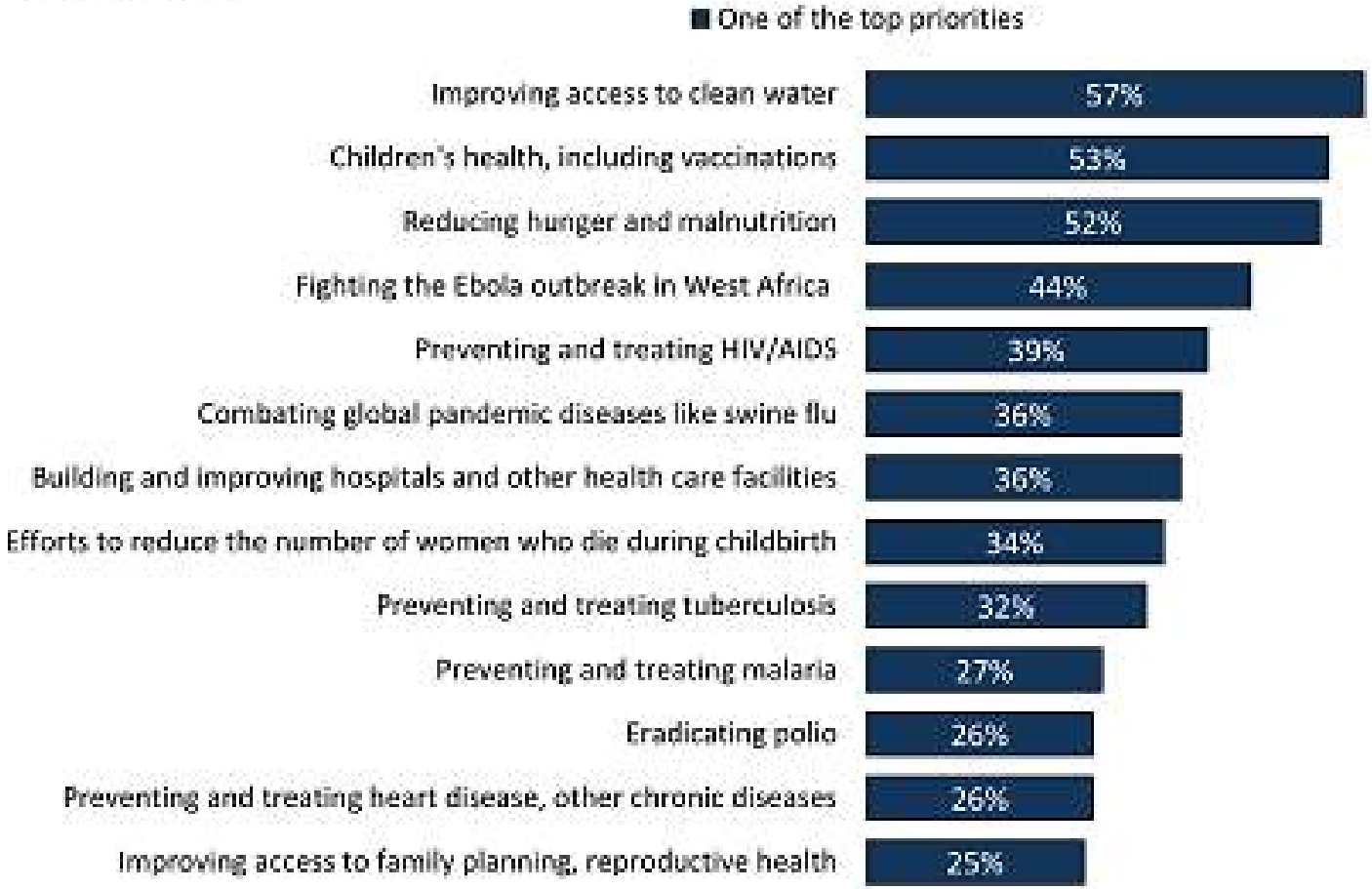


* Funding figures are as of April 14, 2015. All international figures are according to the UN Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking Service and based on international commitments during 2014 and to date in 2015, while USG figures are according to the USG and reflect USG commitments from FY 2014 and FY 2015, which began on October 1, 2013, and October 1, 2014, respectively.

blogs.state.gov/stories/2015/04/21/vaccinations-vitamins-ensuring-west-africans-get-critical-care-amid-ebola-crisis
fts.unocha.org/pageloader.aspx?page=home

Clean Water, Children's Health, Nutrition Rise To Top Of Public's Global Health Priorities

I'm going to read you some different areas in which the U.S. might contribute to efforts to improve health in developing countries, and for each, I'd like you to tell me if this should be one of the top priorities, important but not a top priority, or not that important.



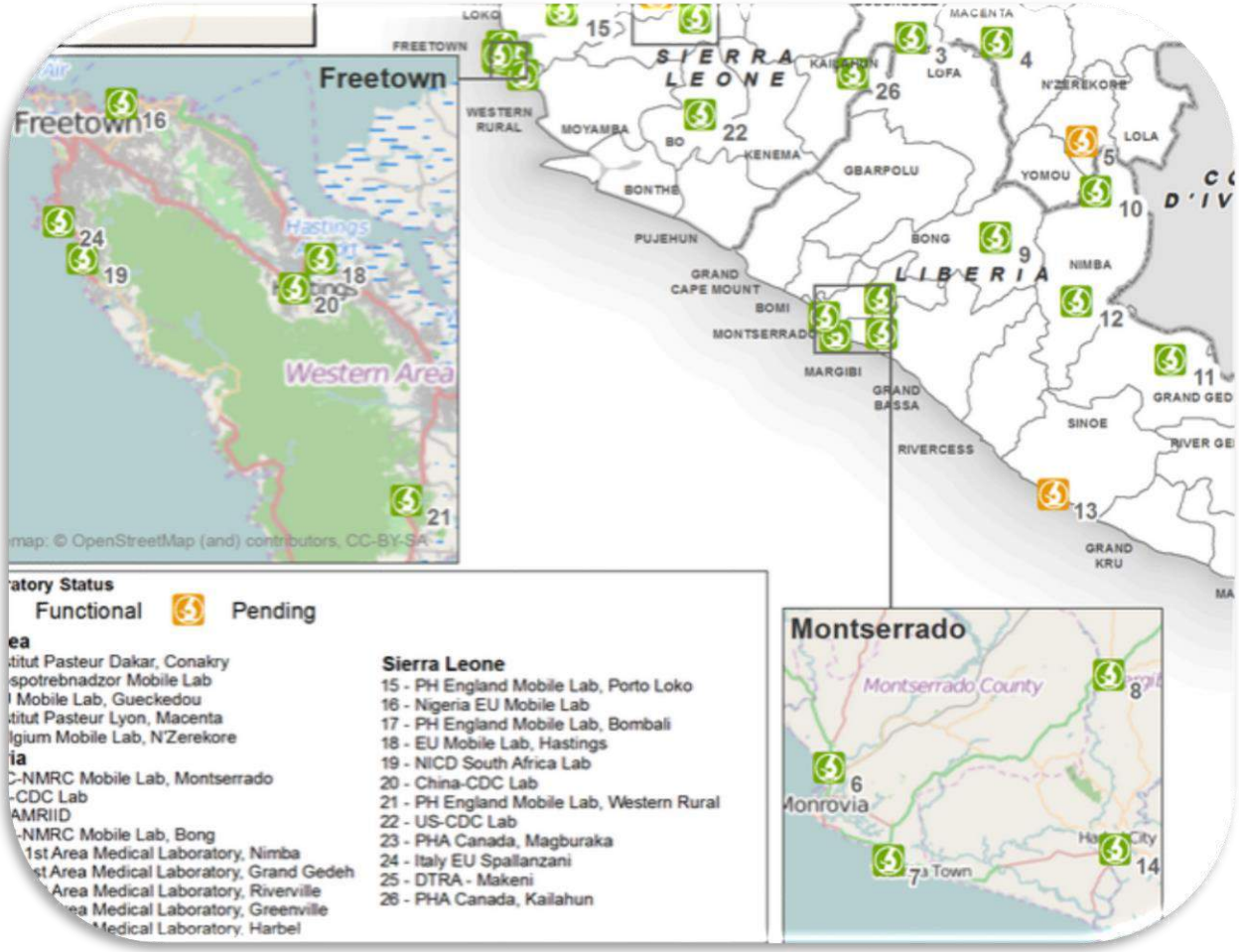
NOTE: Items asked of half sample. Not at all important (vol.) and Don't know/Refused answers not shown.
SOURCE: Kaiser Family Foundation Health Tracking Poll (conducted December 2-9, 2014)

American's Confidence in Healthcare Authorities To Prevent the Spread of Ebola				
	TOTAL	**REPUBLICIANS**	**INDEPENDENTS**	**DEMOCRATS**
If a case of Ebola were diagnosed in your area, how much confidence would you have in each of the following to contain the disease and prevent it from spreading? (Percent who say they would have "a great deal" or " a fair amount" of confidence in each)				
The U.S. Centers for Disease Control and Prevention (CDC)				
Oct. 8–14, 2014	73%	70%	72%	79%
Oct. 17–19, 2014	62%	50%	65%	70%
Change (percentage points)	-11*	-20*	-7	-9*
Your local hospitals				
Oct. 8–14, 2014	64%	64%	60%	69%
Oct. 17–19, 2014	62%	52%	63%	71%
Change (percentage points)	-2	-12*	+3	+2
Your state or local health departments				
Oct. 8–14, 2014	62%	61%	61%	67%
Oct. 17–19, 2014	58%	53%	56%	63%
Change (percentage points)	-4	-8	-5	-4

* indicates a statistically significant difference between Oct. 8-14, 2014 poll and Oct. 17-19, 2014 poll

Kaiser Family Foundation, kff.org/global-health-policy/poll-finding/data-note-update-on-public-confidence-in-u-s-health-institutions-to-deal-with-ebola/

Expansion of Diagnostic Capabilities
Status of Laboratories, December 2014



apps.who.int/ebola/en/status-outbreak/situation-reports/ebola-situation-report-31-december-2014

Expansion of Diagnostic Capabilities Emergency Use Authorizations (EUA)

- **In an emergency, the FDA may issue EUAs to allow the use of drugs, devices, and medical products not previously approved, cleared, or licensed**
- **The 2014 Ebola outbreak warranted the use of EUAs**
  - Since August 5, 2014, ten diagnostic tools have received EUA clearance authorizing their use among patients with signs and symptoms of the Ebola virus
- **The EUA approved diagnostic tools resulted in increased Ebola testing capacity**

www.fda.gov/EmergencyPreparedness/Counterterrorism/MedicalCountermeasures/MCMLegalRegulatoryandPolicyFramework/ucm182568.htm#current

Nightingale SL, Prasher JM, Simonson S. http://wwwnc.cdc.gov/eid/article/13/7/06-1188_article

Challenges of Ebola Response

www.washingtontimes.com/cartoons/dana-summers/are-you-sure-we-shouldnt-be-worried-about-ebola-vi/

Insufficient Surveillance

The NEW ENGLAND JOURNAL of MEDICINE

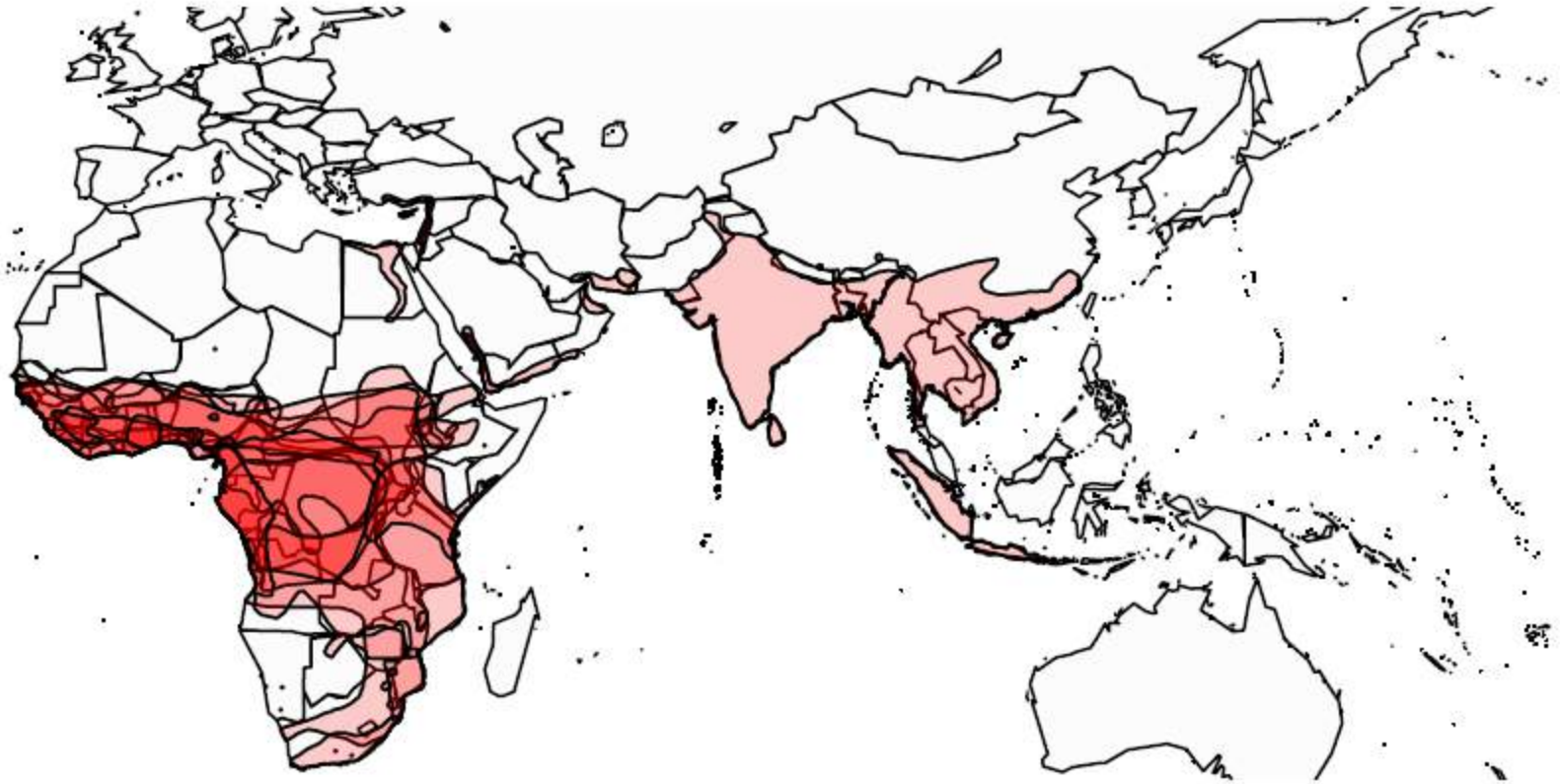
Ebola — A Growing Threat?

Heinz Feldmann, M.D.

The recent emergence of *Zaire ebolavirus* in West Africa[1] has come as a surprise in a region more commonly known for its endemic Lassa fever, another viral hemorrhagic fever caused by an Old World arenavirus. Yet the

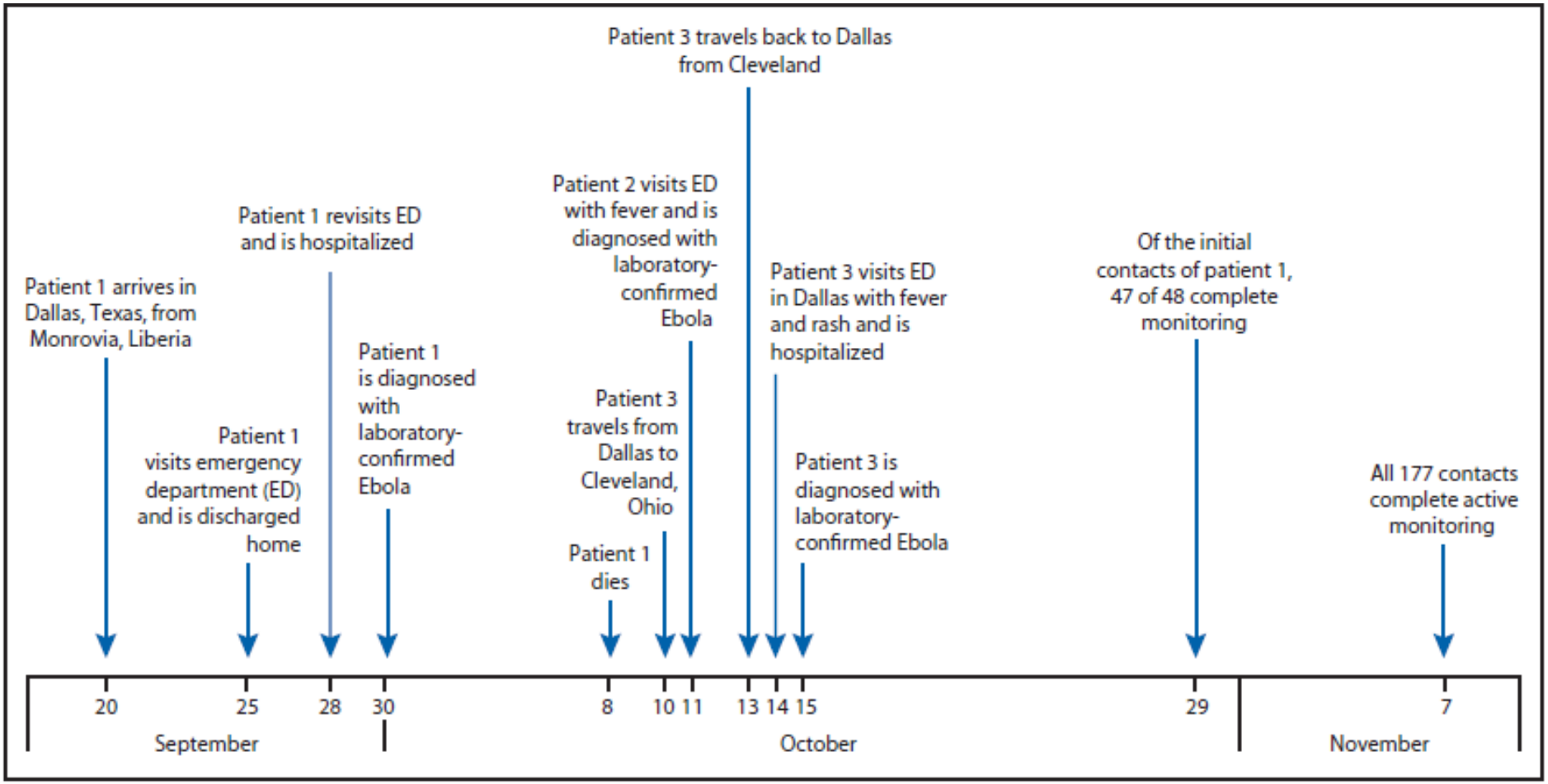
Feldmann H. N Engl J Med. 2014 Oct 9;371(15):1375-8.

Geographic Range for Potential Bat Host Species for *Zaire ebolavirus*



Adapted from Olival, K. and Hayman DTS
www.mdpi.com/1999-4915/6/4/1759

Timeline of Ebola Patients within the U.S., 2014



Chevalier MS, Chung W, Smith J et al; CDC. MMWR. 2014 Nov 21;63(46):1087-8.

Inadequate Global Governance

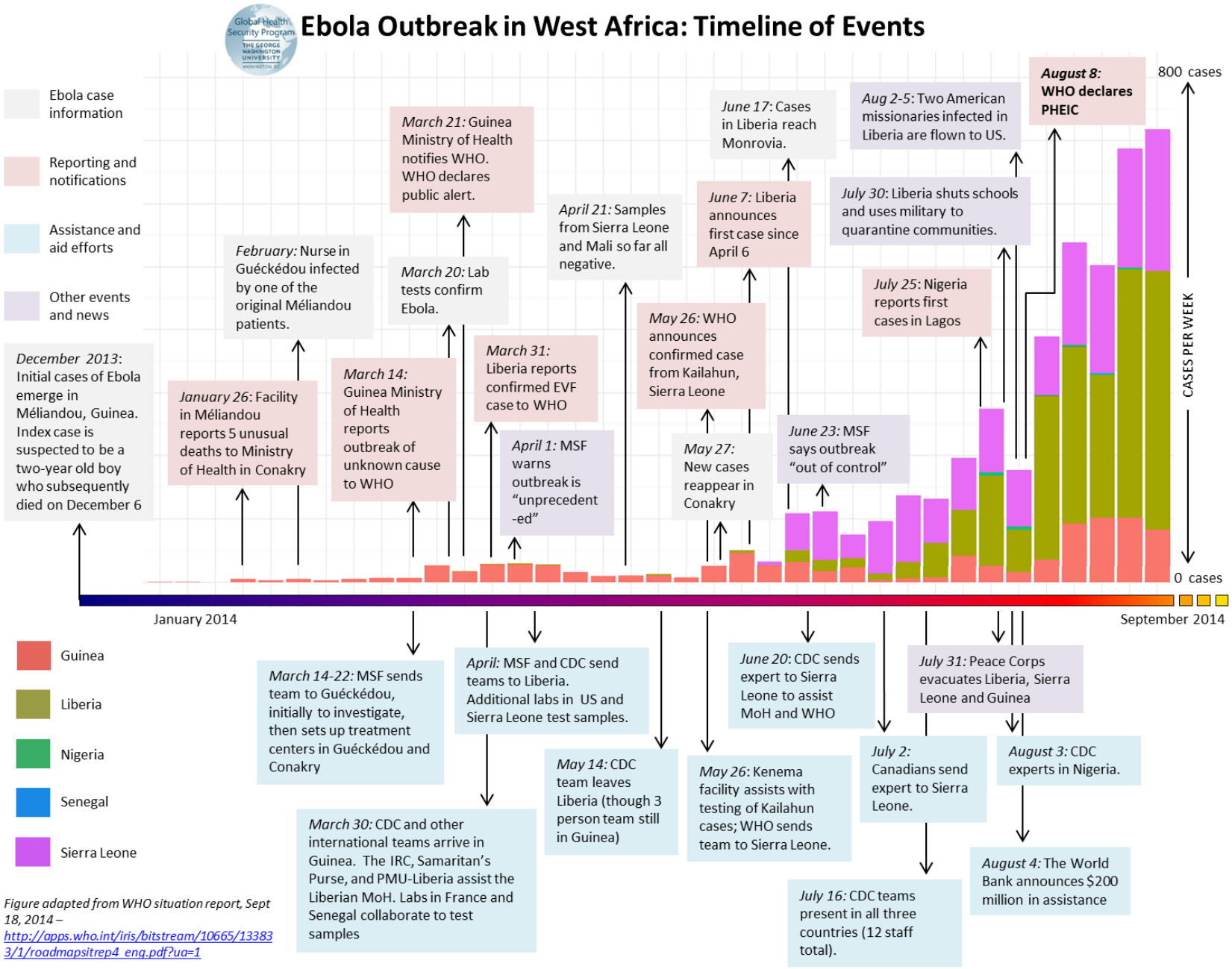
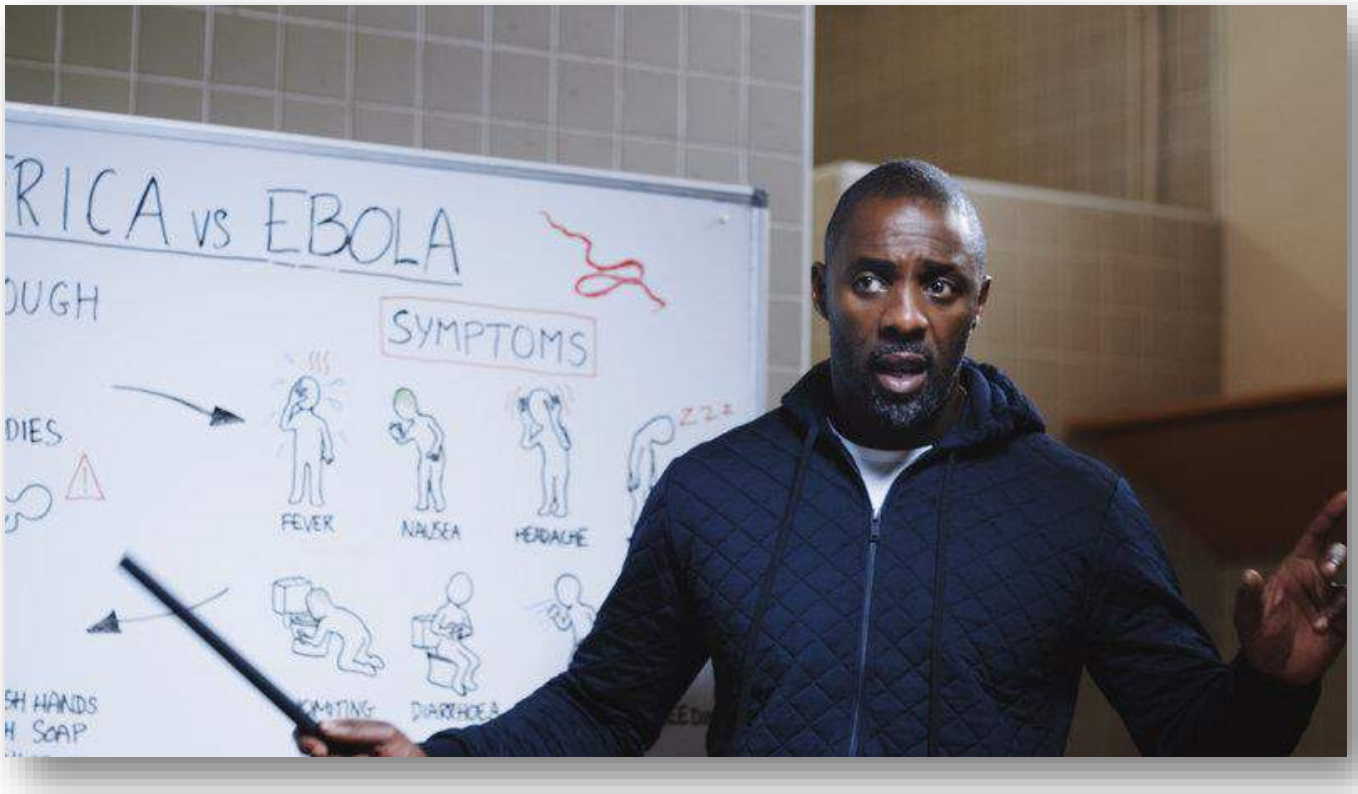


Figure adapted from WHO situation report, Sept 18, 2014 – http://apps.who.int/iris/bitstream/10665/133833/1/roadmapsitrep4_eng.pdf?ua=1

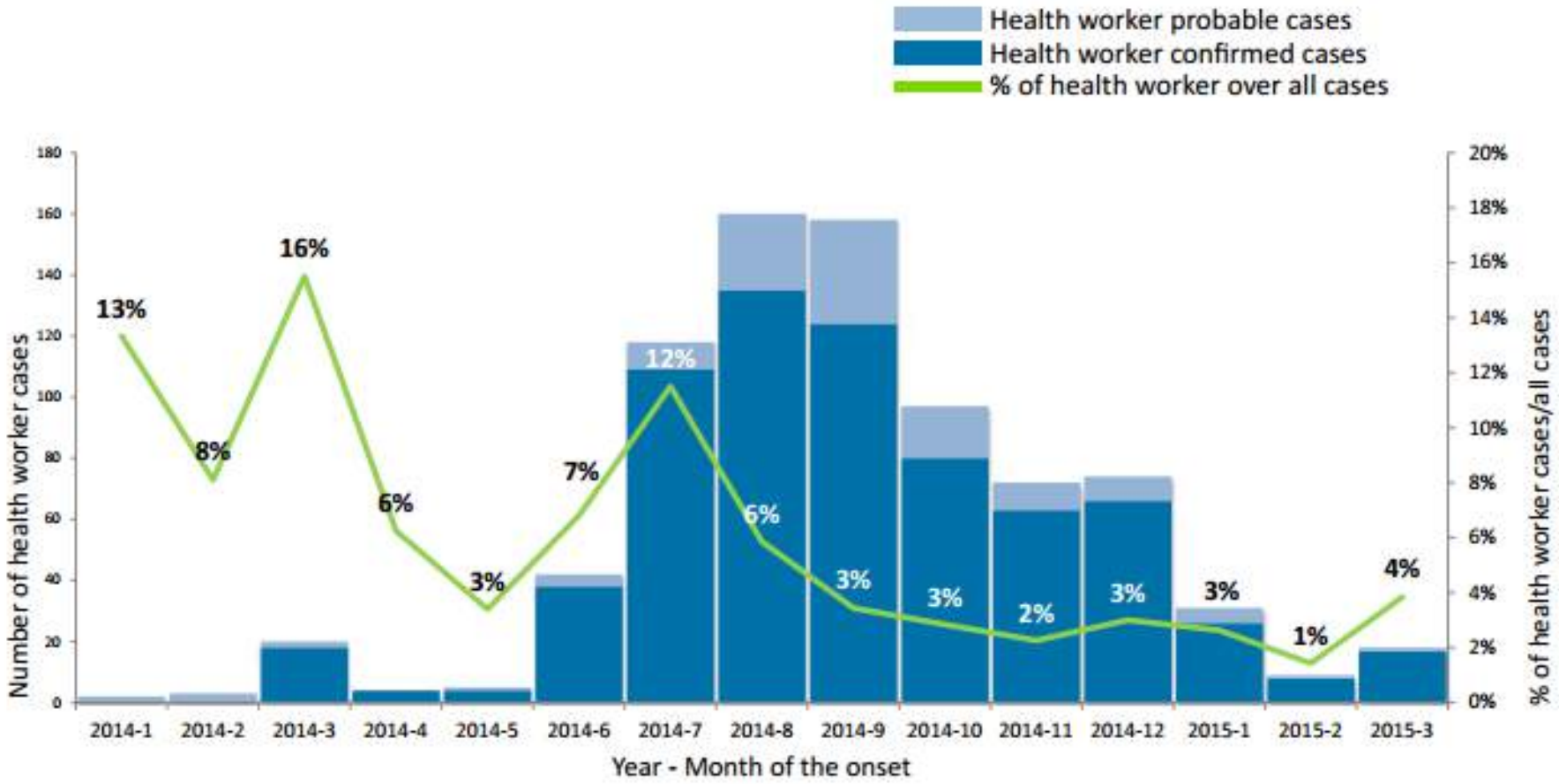
Insufficient Ability to Provide Care for the Sick



"Do not lose hope."

"Trust your health care workers. They're there to help you."

Health Worker Ebola Cases in Guinea, Liberia, and Sierra Leone, January 2014 – March 2015



*All cases include health worker and non-health worker confirmed and probable cases.

World Health Organization
apps.who.int/iris/bitstream/10665/171823/1/WHO_EVD_SDS_REPORT_2015.1_eng.pdf?ua=1

Political Actions Undermined Response

Excerpt from an after-action report:

Federal and state priorities may be unclear, differ, or conflict; authorities may be uncertain; and constitutional issues may arise.
…tensions rapidly developed between state and federal authorities in several contexts. State leaders wanted control of decisions regarding the imposition of disease-containment measures (e.g., mandatory vs. voluntary isolation …), the closure of state borders to all traffic and transportation, and when or whether to close airports. Federal officials argued that such issues were best decided on a national basis to ensure consistency and to give the President maximum control of military and public-safety assets.

Political Actions Undermined Response

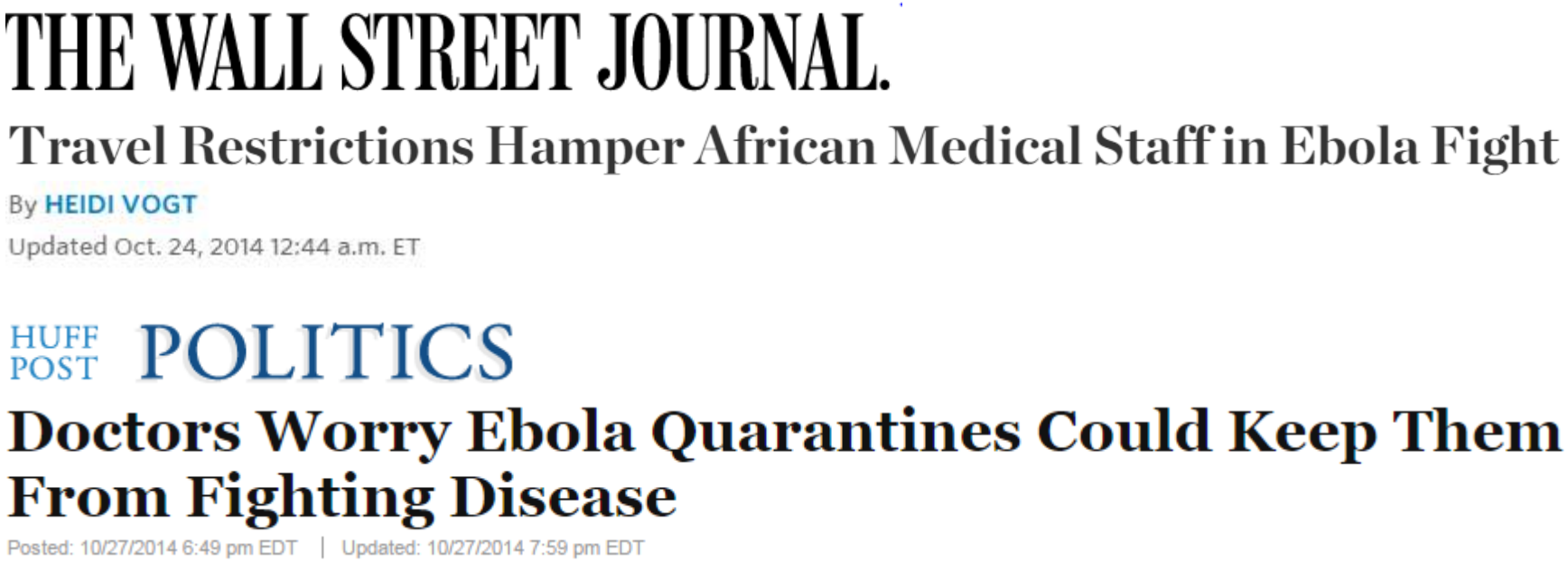
Dark Winter Exercise (2001):

Federal and state priorities may be unclear, differ, or conflict; authorities may be uncertain; and constitutional issues may arise.

…tensions rapidly developed between state and federal authorities in several contexts. State leaders wanted control of decisions regarding the imposition of disease-containment measures (e.g., mandatory vs. voluntary isolation …), the closure of state borders to all traffic and transportation, and when or whether to close airports. Federal officials argued that such issues were best decided on a national basis to ensure consistency and to give the President maximum control of military and public-safety assets.

O'Toole T, Mair M, Inglesby TV. Clin Infect Dis. 2002 Apr 1;34(7):972-83.

Major Media Coverage



THE WALL STREET JOURNAL.

Travel Restrictions Hamper African Medical Staff in Ebola Fight

By HEIDI VOGT

Updated Oct. 24, 2014 12:44 a.m. ET

HUFF POST POLITICS

Doctors Worry Ebola Quarantines Could Keep Them From Fighting Disease

Posted: 10/27/2014 6:49 pm EDT | Updated: 10/27/2014 7:59 pm EDT

Excerpt from State Ebola Response Plan

There is a large body of scientific literature confirming that asymptomatic individuals are not infectious (cannot transmit the infection to another person). Therefore there is no scientific rational for putting an asymptomatic individual under quarantine. However this practice is done under the guise of "abundance of caution". The unfortunate consequence is that this approach undermines the message that Ebola can only be transmitted by persons with symptoms and seriously encroaches on the credibility of health officials.

New York City, October 2014

www.dailymail.co.uk/news/article-2805488/Doctor-treated-Ebola-patients-Africa-rushed-New-York-hospital-103F-fever-nausea.html

Moving Forward

www.katu.com/news/local/Maine-nurse-defies-Ebola-quarantine-with-bike-ride--280944022.html

Strengthen Surveillance Systems: Texas Health Presbyterian Hospital, Dallas

Issue: Asking about patient's travel history

Procedure then: A triage nurse who first interviewed a new ER patient "intentionally did not ask key questions, as travel history was included in the social history." That was gathered after a patient was "placed in a room."

Duncan's case: Duncan waited about 1 1/2 hours before he was taken to a room. He then waited another 30 minutes before a different ER nurse asked about travel.

Procedure now: A triage nurse asks about travel within "5 minutes of patient entry into the ED in 90% of cases, or within a maximum of 10 minutes."

Issue: Documenting travel in the electronic health record system (EHR)

Procedure then: A "yes/no box" in the EHR opened a dialogue screen to document travel history.

Duncan's case: An ER nurse documented in Duncan's records: "Yes, came from Africa on 9/20/2014." She "attached no further significance to this travel history," hospital officials later said. They wouldn't elaborate on whether Duncan, his companion and the nurse referred in their ER conversation only to "Africa" or more specifically to Liberia.

Procedure now: An EHR screening tool was added to "identify patients at risk for serious infectious diseases based on symptoms, travel, and exposure." Nurses are trained to "be specific about countries the patient has recently traveled to or from."

res.dallasnews.com/interactives/duncan-changes/

Create Global Clinical Response Corps

World Health Organization

EXECUTIVE BOARD
Special session on Ebola
Agenda item 3

EBSS/3/CONF./1 REV.1
25 January 2015

Ebola: Ending the current outbreak, strengthening global preparedness and ensuring WHO capacity to prepare for and respond to future large-scale outbreaks and emergencies with health consequences

Draft resolution proposed by Algeria, Australia, Bangladesh, Benin, Brazil, Canada, Chile, China, Cuba, Egypt, Georgia, Guinea, India, Indonesia, Israel, Jamaica, Japan, Liberia, Mauritius, Mexico, Monaco, Morocco, Nigeria, Norway, Panama, Peru, Senegal, Sierra Leone, South Africa, Switzerland, Thailand, Togo, United States of America, Uruguay, Zambia, Zimbabwe, and European Union Member States

Perspective

The Next Epidemic — Lessons from Ebola

Bill Gates

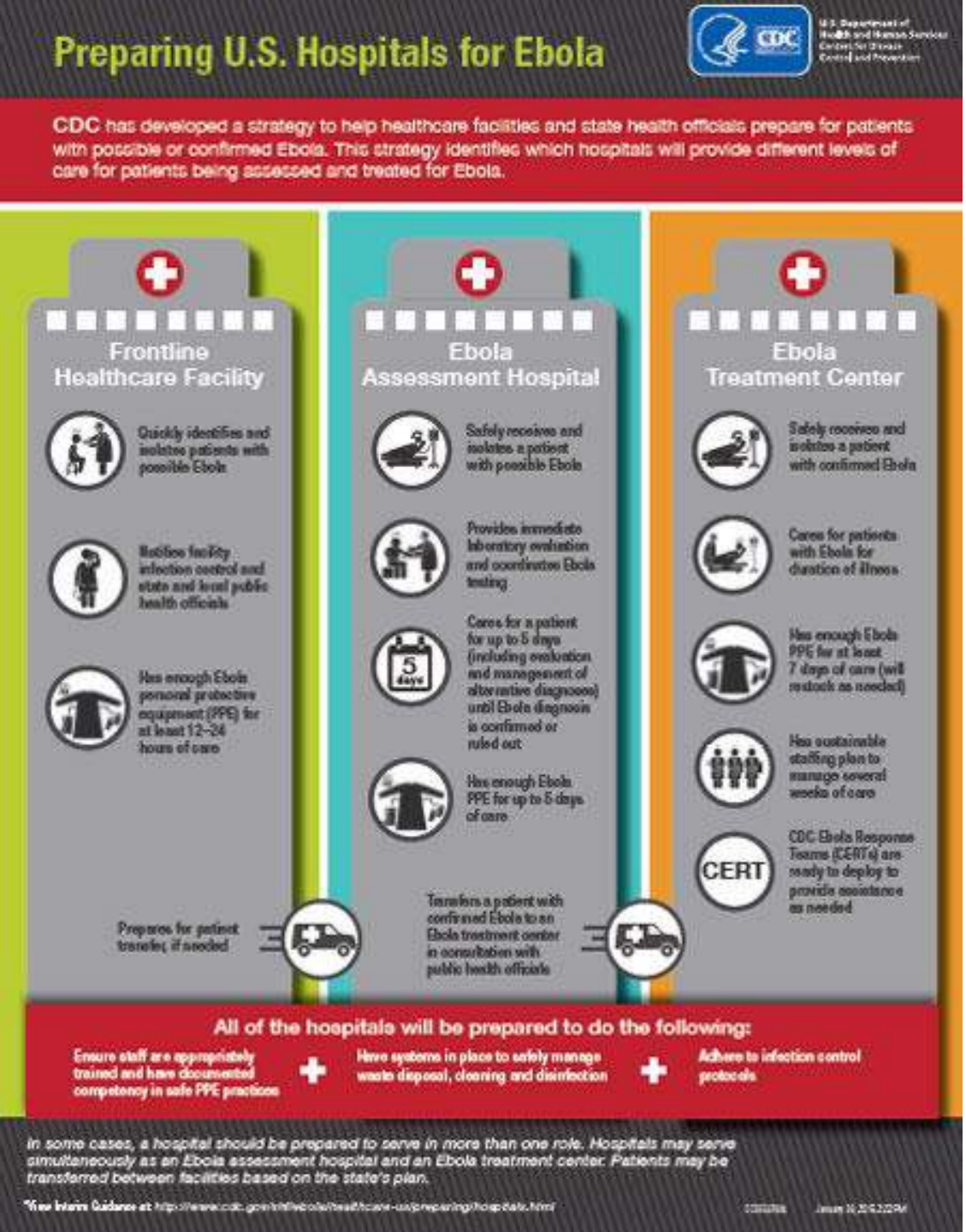
N Engl J Med 2015; 372:1381-1384 | April 9, 2015 | DOI: 10.1056/NEJMp1502918

The NEW ENGLAND JOURNAL of MEDICINE

Pushed to the Limit and Beyond

A year into the largest ever Ebola outbreak

apps.who.int/gb/ebwha/pdf_files/EBSS3/EBSS3_CONF1Rev1-en.pdf
www.msf.org/article/ebola-pushed-limit-and-beyond
www.nejm.org/doi/full/10.1056/NEJMp1502918



"Where's the MERS hospital?"

MERS: Middle Eastern Respiratory Syndrome
www.cdc.gov/vhf/ebola/healthcare-us/preparing/hospitals.html

Promote Evidence-based Policies

ISSUE BRIEF

TRAVEL BANS WILL INCREASE THE DAMAGE WROUGHT BY EBOLA

Jennifer B. Nuzzo, Anita J. Cicero, Richard Waldhorn, and Thomas V. Inglesby

CASES OF EBOLA THAT HAVE TURNED UP IN Dallas and New York City have prompted calls for a travel ban to prohibit travelers from Sierra Leone, Liberia, and Guinea from entering the US during the ongoing Ebola outbreak.[1] Prevention (CDC)—have opposed imposing travel bans is that there is no scientific or even good anecdotal evidence that bans have ever been effective at limiting the spread of contagious diseases.[2,3] A recent modeling analysis showed

Nuzzo JB, Cicero AJ, Waldhorn R, Inglesby TV. Biosecurity and Biodenfse Strategy, Practice, and Science, 2014; 12(6):306-9.

New York City Leaders Meet

Mayor Bill de Blasio, wife Chirlane McCray, and New York City Health Commissioner Dr. Mary Bassett at The Meatball Shop in New York, Saturday, Oct. 25, 2014, where an Ebola patient ate just before he became ill.

www.timesunion.com/news/article/City-s-health-czar-brings-a-comforting-tone-5848133.php#photo-7052385
AP Photo/Craig Ruttle

Persons with Potential Ebola Exposure within the U.S., November 3, 2014 – March 8, 2015

TABLE. Summary of active and direct active monitoring of persons with potential Ebola exposure, by risk category — United States, November 3, 2014–March 8, 2015

Monitoring element	Risk category			Total
	High risk and some risk	Low (but not zero) risk		
		Travelers	U.S. HCWs	
Type of daily monitoring	DAM	AM	DAM	—
Reporting frequency to CDC	Daily	Weekly	Weekly	—
No. of persons monitored	315	9,512	527	10,344*
No. of jurisdictions conducting monitoring	47	54	10	54

Abbreviations: AM = active monitoring; DAM = direct active monitoring; HCWs: Health care workers, including laboratory personnel.

* Adjusted for persons whose risk category changed from some risk to low risk.

Stehling-Ariza T, Fisher E, Vagi S et al. MMWR. 2015 Jul 3;64(25):685-9.

Motivate Health Security Investments
Global Health Security Agenda (GHSA)

Prevent

- Prevent 1: Antimicrobial Resistance
- Prevent 2: Zoonotic Disease
- Prevent 3: Biosafety and Biosecurity
- Prevent 4: Immunization

Detect

- Detect 1: National Laboratory
- Detect 2 & 3: Real-Time Surveillance
- Detect 4: GHSA Reporting
- Detect 5: Workforce Development

Respond

- Respond 1: Emergency Operations Centers
- Respond 2: Linking Public Health with Law and Multisectoral Rapid Response
- Respond 3: Medical Countermeasures and Personnel Deployment Action Package

www.cdc.gov/globalhealth/security/actionpackages/default.htm

Strengthen Core Capacities

The New York Times

U.S.

Contact Tracing Is Called Pivotal in Fighting Ebola

By HEATHER MURPHY OCT. 2, 2014

Although Ebola is new to the United States, the goal of contact tracing is the same in any disease: Track down those who could have been exposed, interview them and monitor them — in this case, for 21 days, the incubation period of the Ebola virus.

In the United States, it is far more common for contact tracers employed by local and state health departments to investigate measles, sexually transmitted diseases like H.I.V. and gonorrhea, and illnesses that originate with animals, such as rabies.

www.nytimes.com/2014/10/03/us/tracing-ebola-contacts-can-stop-virus-in-its-tracks-experts-say.html?_r=0

THE LANCET Infectious Diseases

Volume 15, No. 2, p146–147, February 2015

Ebola: lessons learned from HIV and tuberculosis epidemics

Paul K Drain

Global Health Action

COACTION

CURRENT DEBATE

Addressing Ebola-related Stigma: Lessons Learned from HIV/AIDS

Mariam Davtyan[1], Brandon Brown[1]* and Morenike Oluwatoyin Folayan[2]

Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science
Volume 8, Number 3, 2010 © Mary Ann Liebert, Inc.
DOI: 10.1089/bsp.2010.0021

Stigma, Health Disparities, and the 2009 H1N1 Influenza Pandemic: How to Protect Latino Farmworkers in Future Health Emergencies

Monica Schoch-Spana, Nidhi Bouri, Kunal J. Rambhia, and Ann Norwood

Broader Benefits of the GHSA

Prevent	Detect	Respond
Prevent 1: Antimicrobial Resistance	Detect 1: National Laboratory	Respond 1: Emergency Operations Centers
Prevent 2: Zoonotic Disease	Detect 2 & 3: Real time Surveillance	Respond 2: Linking Public Health with Law and Multisectoral Rapid Response
Prevent 3: Biosafety and Biosecurity	Detect 4: GHSA Reporting	Respond 3: Medical Countermeasures and Personnel Deployment Action Package
Prevent 4: Immunization	Detect 5: Workforce Development	

Areas of potential overlap of GHSA with TB control efforts

www.cdc.gov/globalhealth/security/actionpackages/default.htm

Thank You

Learn more about this journal

CALL FOR PAPERS

Surveillance and Health Security: Building the New Systems We Need to Detect and Manage Health Threats

A Special Feature in ***Health Security*** (formerly *Biosecurity and Bioterrorism*)

TOPIC EDITORS

Jennifer Nuzzo, DrPH, and Sanjana Ravi, MPH
UPMC Center for Health Security, Baltimore, Maryland

Deadline for article submission: December 31, 2015

SUBMIT YOUR MANUSCRIPT

Global Health Security:
Disease Surveillance and Diagnostic Capacity

CAPT David L. Blazes, MC, USN

Director, Military Tropical Medicine

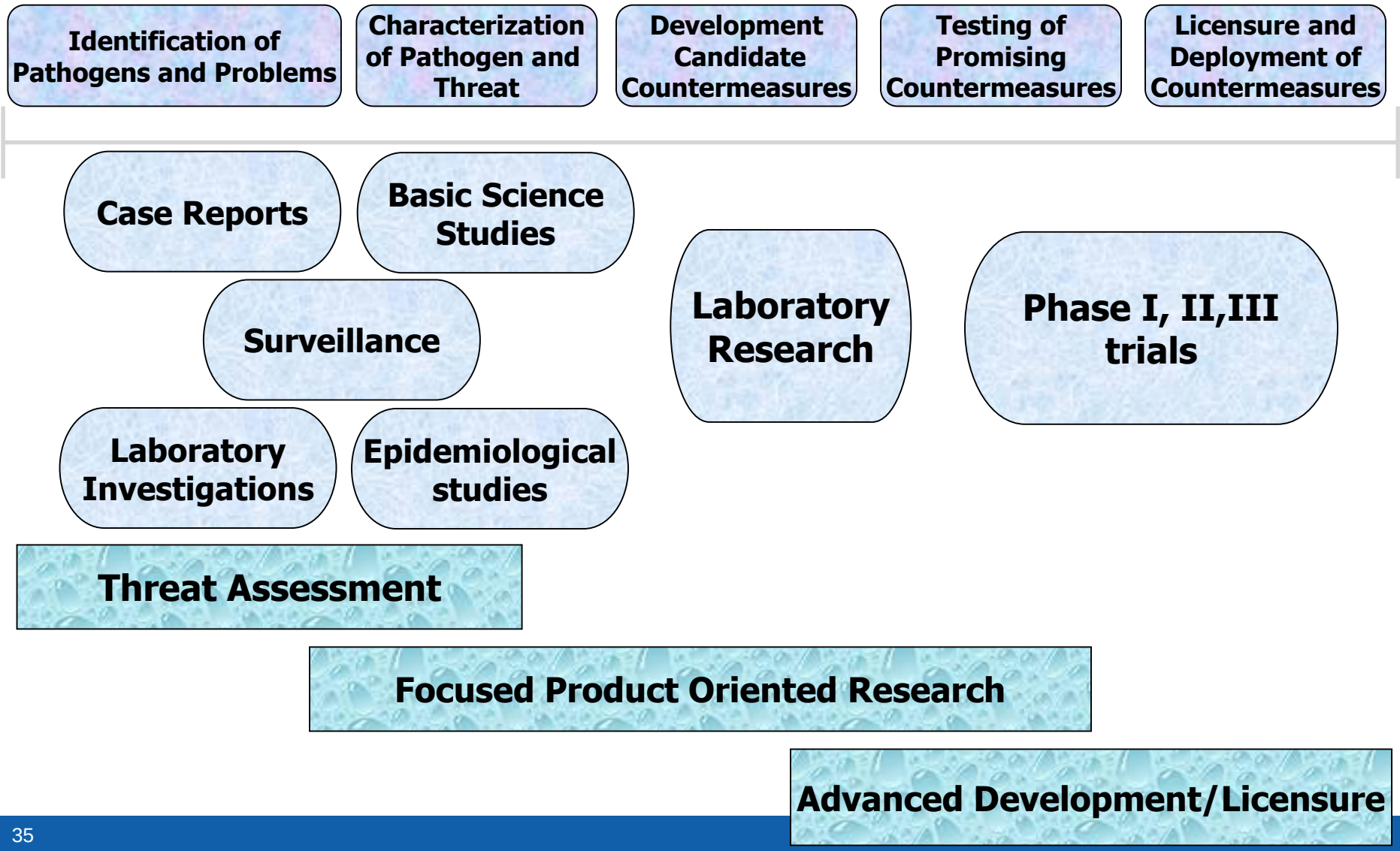
Navy Medicine Professional Development Center

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Disclaimers and Disclosure

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the US Navy, US Department of Defense (DoD), nor of the US Government
- Discussion of non-FDA approved products identified where appropriate
- No conflicts of interest
- Content UNCLASSIFIED

Continuum of Infectious Diseases Research



Presidential Decision Directive NSTC-7, June 1996

- "The mission of the DoD will be expanded to include support of **global surveillance, training, research, and response to emerging disease threats**"
- "… **DoD will strengthen it's global disease reduction efforts through**: centralized coordination; improved preventive health programs and epidemiological capabilities; and enhanced involvement with military treatment facilities and overseas laboratories."

fas.org/irp/offdocs/pdd/pdd-nstc-7.pdf

Global Emerging Infections Surveillance and Response System Priorities:

Strategic Goals and Priority Pillars

NSTC-7: "the mission of the DoD will be expanded to include support of global surveillance, training, research, and response to emerging infectious disease threats…"

Military Health System Quadruple Aim => Readiness; Population Health

GEIS PROGRAM

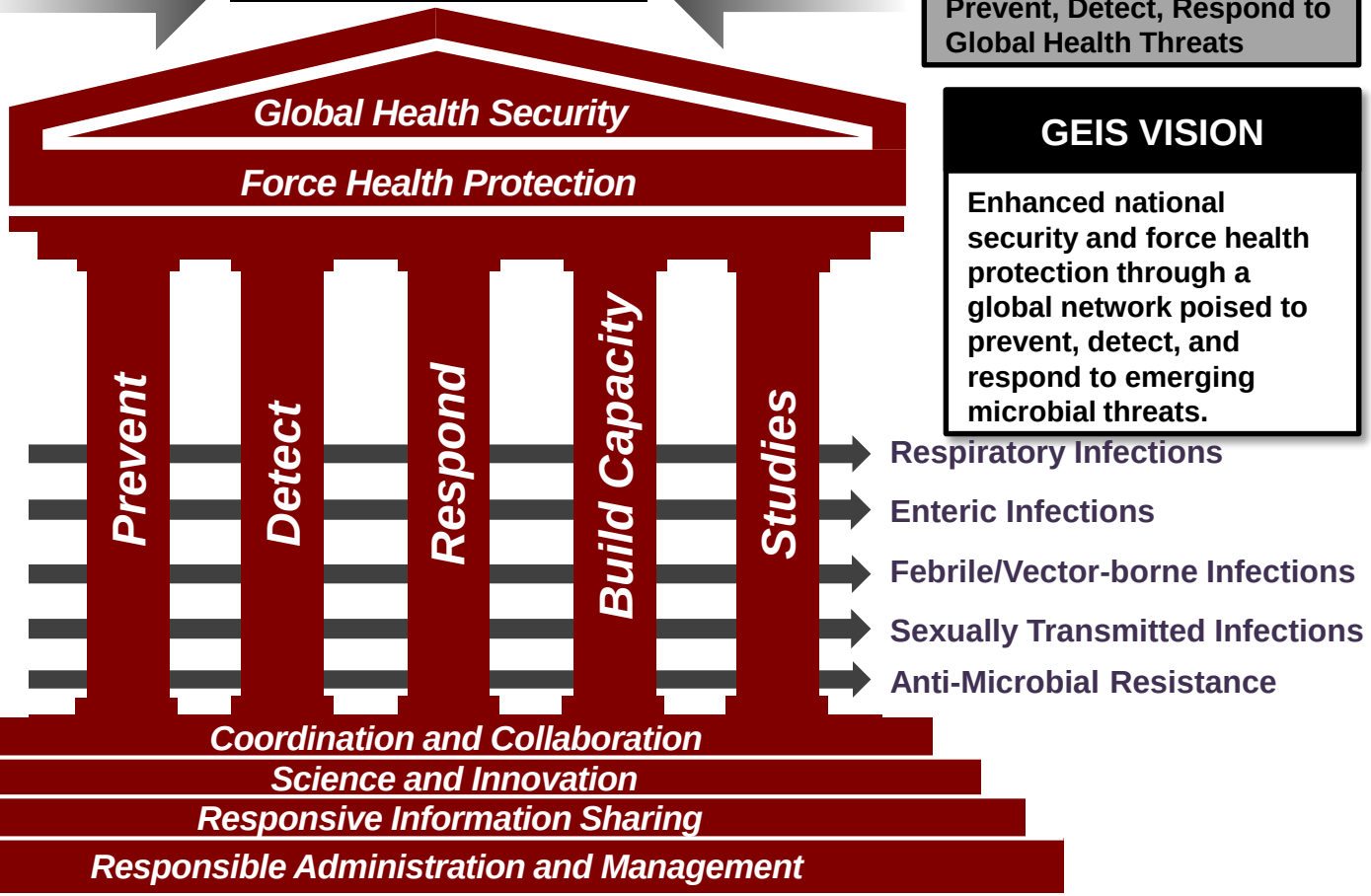
Global Health Security Agenda: Prevent, Detect, Respond to Global Health Threats

GEIS MISSION

To enhance force health protection and global health security by focused coordination and support of global civil and military health networks to prevent, detect, and respond to emerging and priority microbial threats through infectious diseases surveillance, laboratory harmonization, capacity building, and scientific studies.

GEIS VISION

Enhanced national security and force health protection through a global network poised to prevent, detect, and respond to emerging microbial threats.

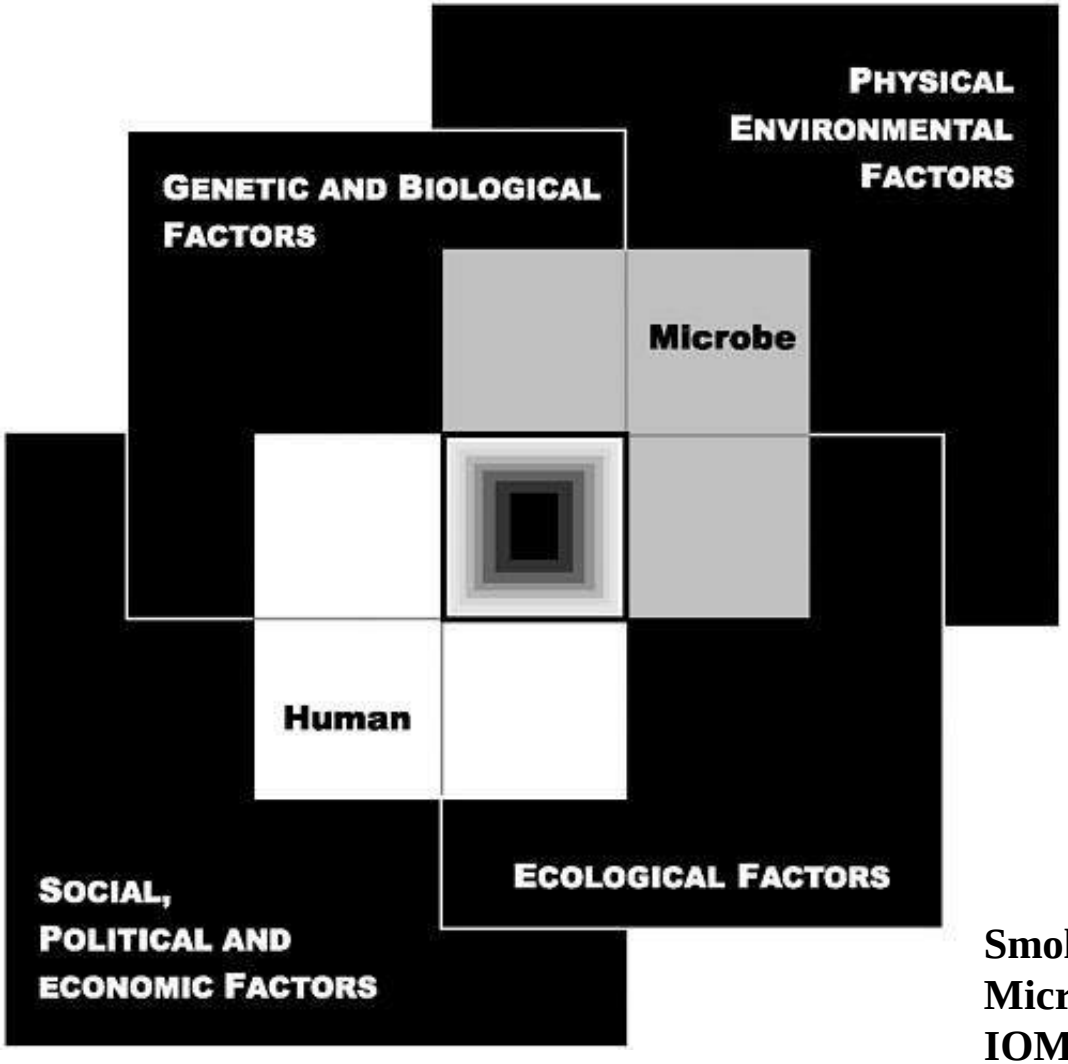


Foundation For Global Emerging Infections Surveillance and Response System Key Tasks

- PDD NSTC-7, Emerging Infectious Diseases (1997)
- Defense Strategic Guidance (Jan 2012)
- AFHSC Strategic Plan 2013–2015
- DHA Strategic Plan (Pending Release)
- Guidance for Employment of the Force (GEF)
- Joint Operational Access Concept (Oct 2014)
- National Strategy for Combating Antibiotic-Resistant Bacteria (CARB) (Oct 2014)
- National Strategy for Countering Biological Threats (Nov 2009)
- National Strategy for Biosurveillance (Jul 2012)

PDD: Presidential Decision Directive
AFHSC: Armed Forces Health Surveillance Center
DHA: Defense Health Agency

Convergence Model



Smolinski et al, Microbial Threats to Health, IOM Report 2003

IOM: Institute of Medicine

DoD Tropical Disease Research Labs

NMRC / WRAIR
Silver Spring, MD

AFRIMS
Bangkok
1959

NMRC-Asia/NAMRU-2
Singapore / Cambodia
1945

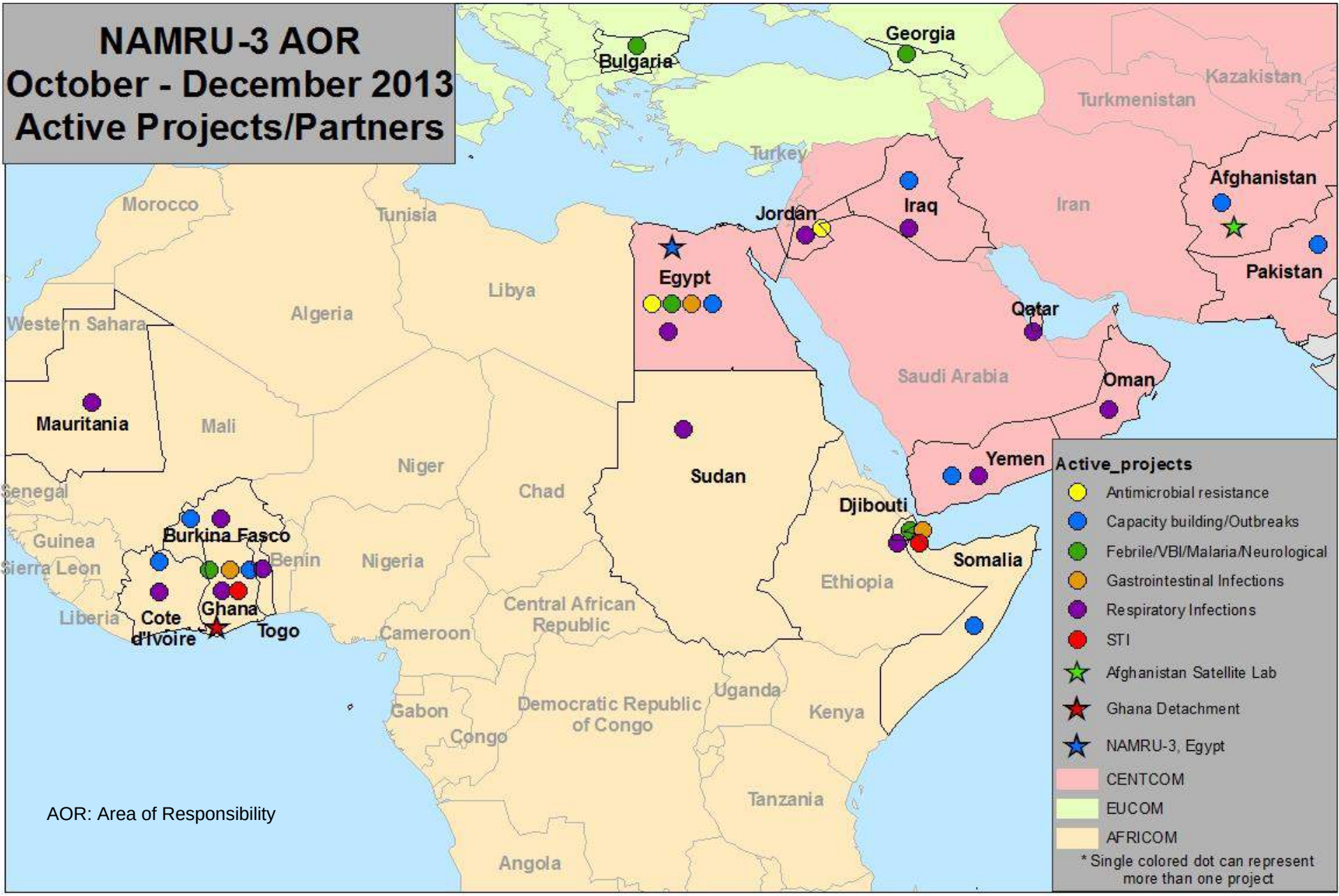
NAMRU-6
Lima
1983

NAMRU-3
Cairo
1946

USAMRU-K
Nairobi
1969

NAMRU: Naval Medical Research Unit

USAMRU: US Army Medical Research Unit

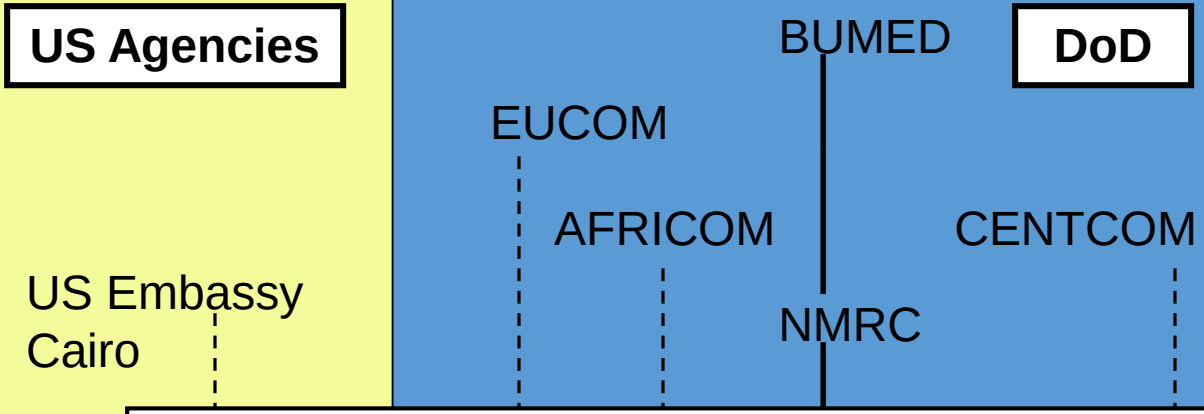

NAMRU-3 AOR
October - December 2013
Active Projects/Partners
Bulgaria
Georgia
Kazakistan
Turkmenistan
Turkey
Afghanistan
Iraq
Iran
Jordan
Pakistan
Egypt
Morocco
Tunisia
Libya
Algeria
Western Sahara
Qatar
Saudi Arabia
Oman
Mauritania
Mali
Niger
Sudan
Yemen
Senegal
Chad
Djibouti
Burkina Fasco
Guinea
Benin
Nigeria
Somalia
Sierra Leon
Ethiopia
Liberia
Ghana
Cote d'Ivoire
Togo
Central African Republic
Cameroon
Uganda
Gabon
Democratic Republic of Congo
Kenya
Congo
Tanzania
Angola
AOR: Area of Responsibility
Active_projects
Antimicrobial resistance
Capacity building/Outbreaks
Febrile/VBI/Malaria/Neurological
Gastrointestinal Infections
Respiratory Infections
STI
Afghanistan Satellite Lab
Ghana Detachment
NAMRU-3, Egypt
CENTCOM
EUCOM
AFRICOM
* Single colored dot can represent more than one project

Chain of Command, Sponsors and Collaborators

US Agencies

DoD

Other organizations



U.S. Naval Medical Research Unit No. 3

DOS
- •USAID
- •OMC/ODC
- •US EMB

DHHS
- •HHS
- •CDC/IEIP
- •NIH

DHS
- •NBFAC
- •USDA, DOE, etc.

<u>DOD</u>
- •OSD-HA
- •OSD-policy
- •DTRA/CTRA
- •AFMIC

<u>EUCOM</u>
- •NAVEUR 6th fleet
- • MTFs

<u>CENTCOM</u>
- •HOA
- •CSTCA
- •CTF 82
- •NAVCENT 5th fleet
- •ARCENT

<u>Other</u>
- •EPMUs
- •MFO-Sinai

<u>Research</u>
- •GEIS
- •MIDRP
- •NMRC
- •WRAIR
- •USAMRIID
- •NHRC
- •DHAPP
- •USUHS
- •MTFs
- •OCONUS labs

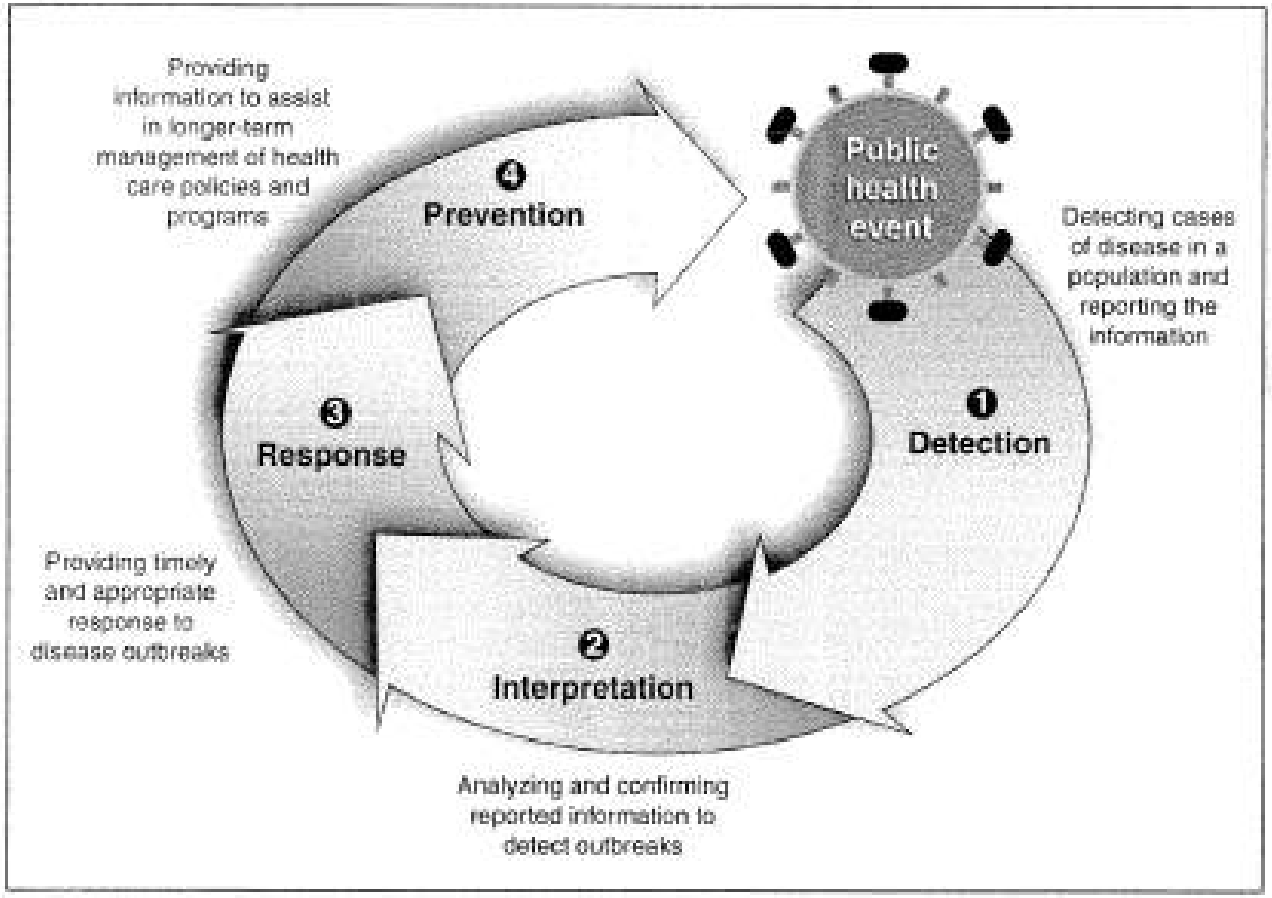
UN orgs
- •WHO
  - •EMRO
  - •EURO
  - •AFRO
- •FAO

- •Host Nations
- •GOE
- •MOH(P)
- •Other Ministries: MOA/MOD/MOE
- •Universities
- •NGOs
- •Donors
- •Industry

For official use only

Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



Source: GAO analysis.

Febrile and Vector-Borne Infections (FVBI)

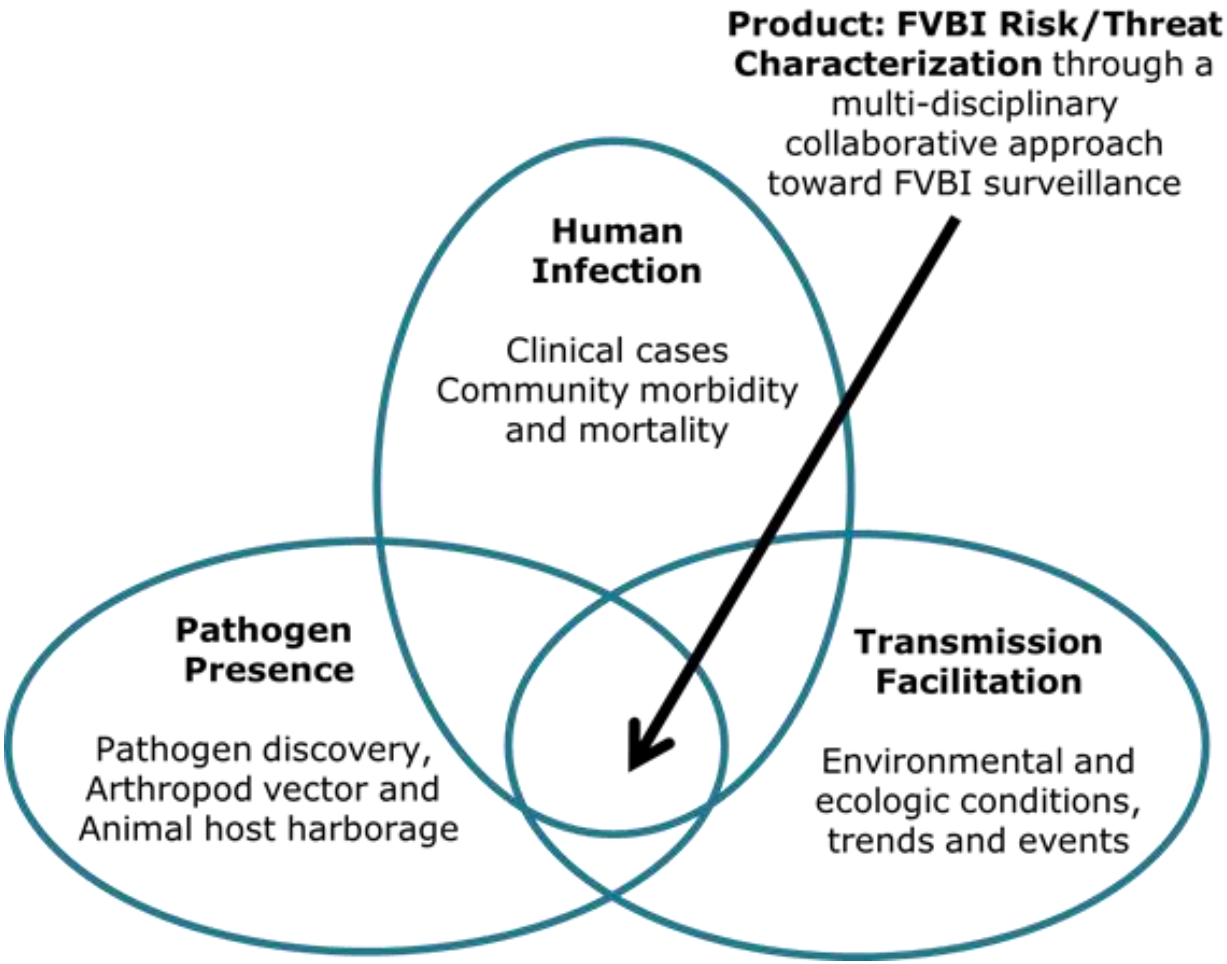
FVBI Program Goal

- Prevention and control of human FVBI within the context of global health security and US DoD force health protection priorities

FVBI Program Objectives

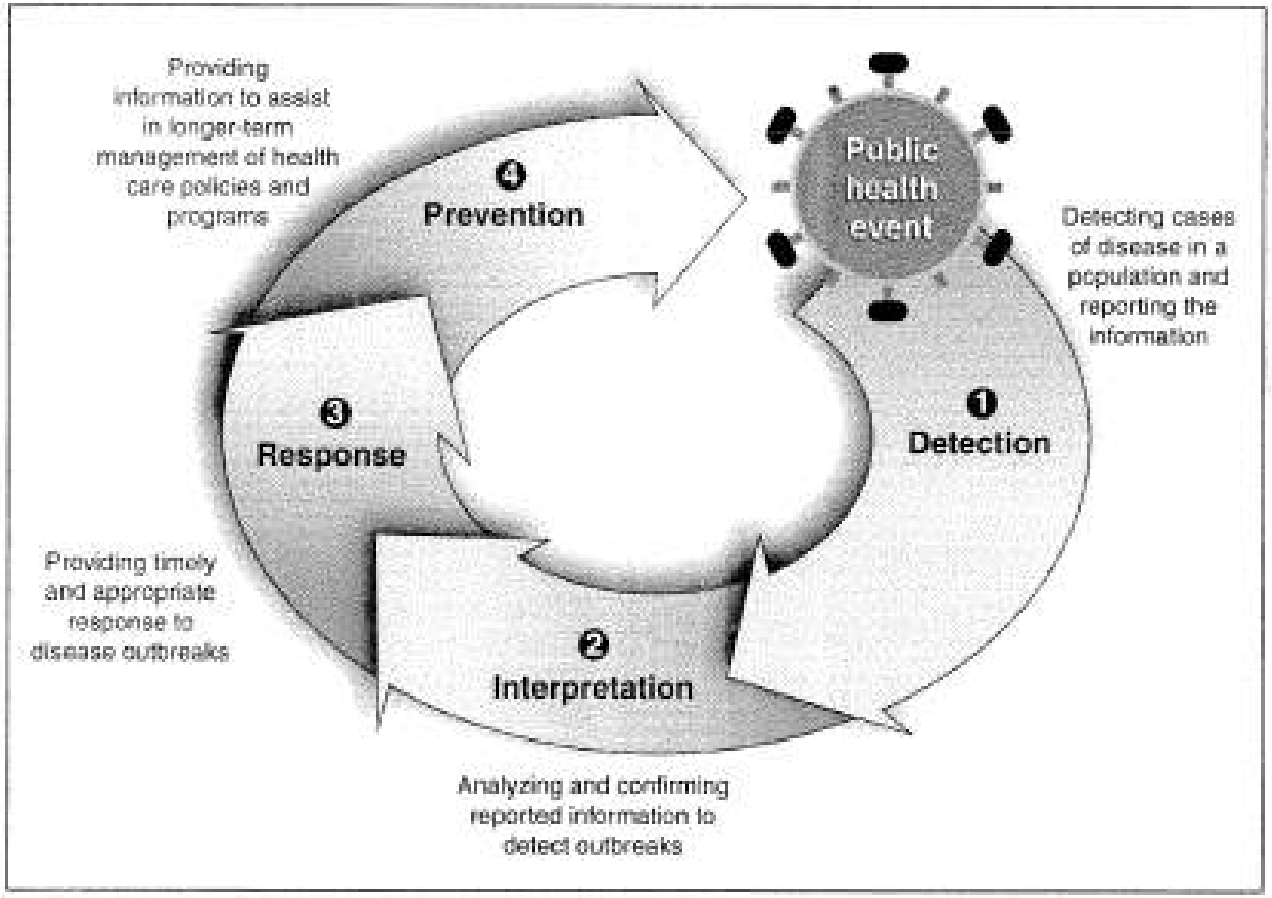
- FVBI surveillance efforts contribute to the characterization of DoD-relevant FVBI risks and threats while providing timely, relevant, and actionable surveillance data in support of the pillar's two strategic objectives:
  - Development of accurate disease characterizations and risk assessments for priority and/or novel human FVBI
  - Generation of accurate disease risk maps for militarily relevant geographic areas

Febrile and Vector-Borne Infections (FVBI) Surveillance



Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



Source: GAO analysis.

Operation United Assistance Diagnostic Support

- **Phase 1: Ebola diagnostics at 2 locations**
  - Island Clinic, Monrovia
    - Ebola Treatment Unit (ETU) managed by WHO
  - Cuttington University, Bong County
    - ETU managed by International Medical Corps
  - 19 September 2014 – 3 March 2015
- **Phase 2: Molecular diagnosis training and continue Ebola diagnosis at 1 location**
  - Bong County
  - 20 February 2015 – 25 May 2015

Ebola Diagnostics

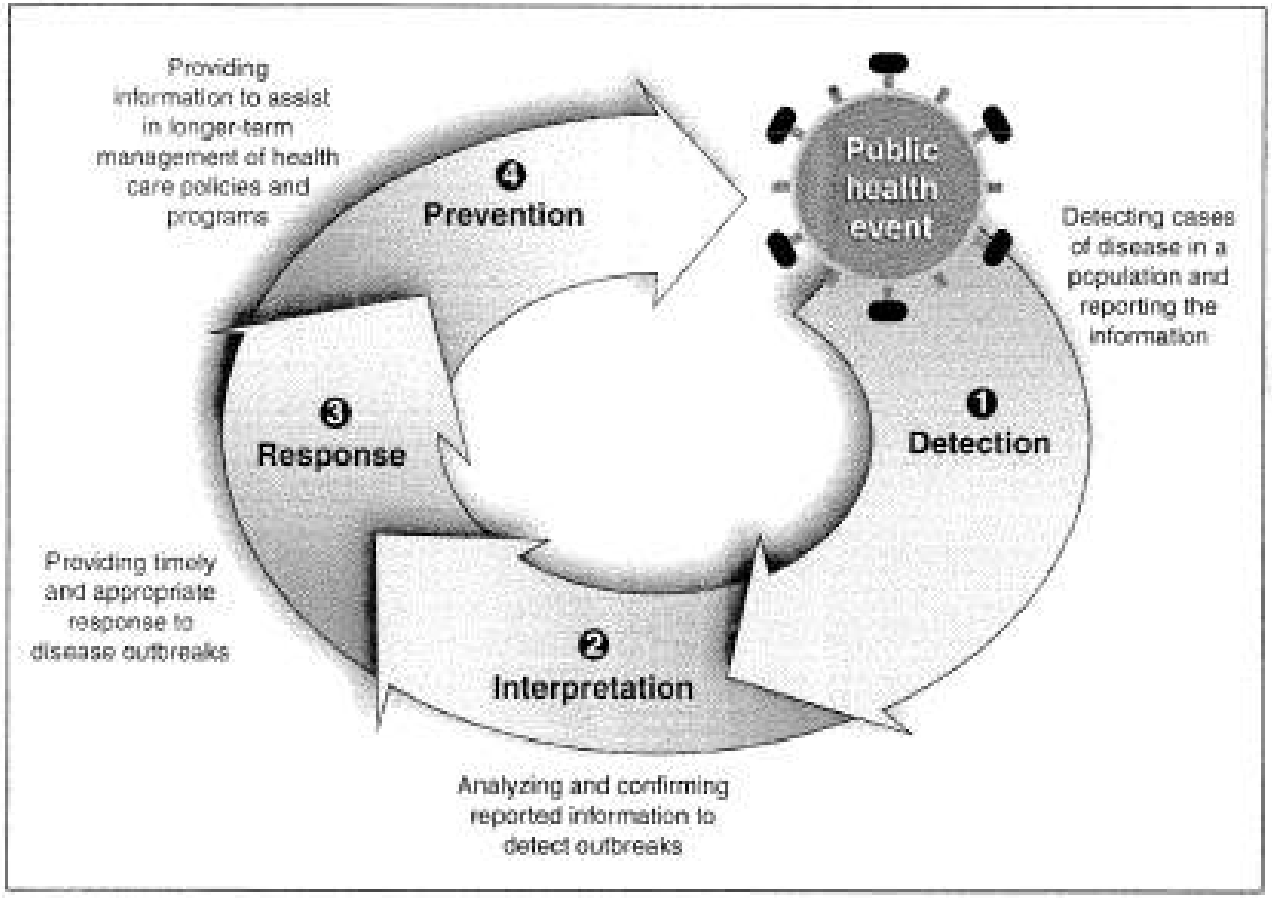
- **NMRC ISO production lab at Ft. Detrick produced over 300,000 PCR Ebola diagnostic assays**
  - Emergency Use Authorization kits
  - Surveillance kits
  - Deployed to all DoD labs
  - Used by state-based Laboratory Response Network labs
    - All cases in USA were diagnosed initially with NMRC reagents
- **Developed lateral flow immunoassay**
  - Sensitivity 92%, Specificity 98%
  - OraSure® platform

NMRC: Naval Medical Research Center
ISO: International Organization for Standardization
PCR: Polymerase chain reaction

Perkins MD, Kessel M. Nat Biotechnol. 2015 May;33(5):464-9.
www.fda.gov/downloads/MedicalDevices/Safety/EmergencySituations/UCM456912.pdf

Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



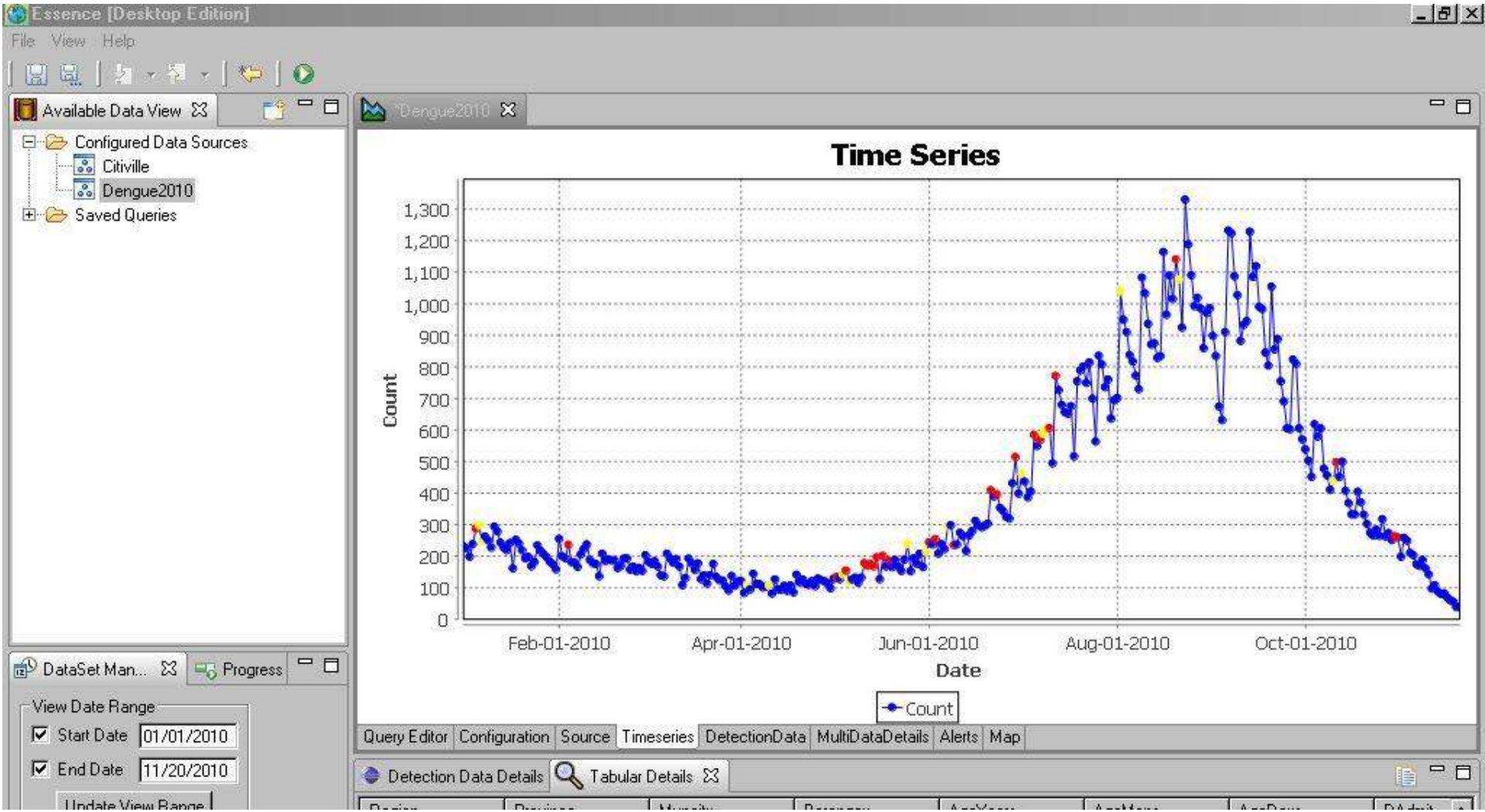
Source: GAO analysis.

WRAIR Ebola Prevention Research and Development

- **Completed Phase 1 clinical testing of VSV-EBOV vaccine candidate at WRAIR (USAMRID and DoD Chemical Biological Defense Program); published in NEJM, April 2015**
- **Developed lab tests to support VSV-EBOV Ebola vaccine clinical studies; 2014**
- **HIV vaccine research infrastructure in Uganda leveraged for Ebola studies**
  - First Ebola vaccine clinical trial in Africa in 2009 (VRC/NIAID); published in The Lancet, December 2014
  - Phase 1b clinical trial testing Chimpanzee Adenovirus type 3 vector (ChAd3) vaccines (co-developed by the VRC/NIAID and GlaxoSmithKine®), ongoing
  - Largest, long-term follow up study on Ebola survivors from 2007-08 Bundibugyo ebolavirus outbreak; published in Lancet ID, April 2015
- **In August, 2015 began Phase 2 vaccine study in Nigeria using ChAd3 vaccine (GSK)**

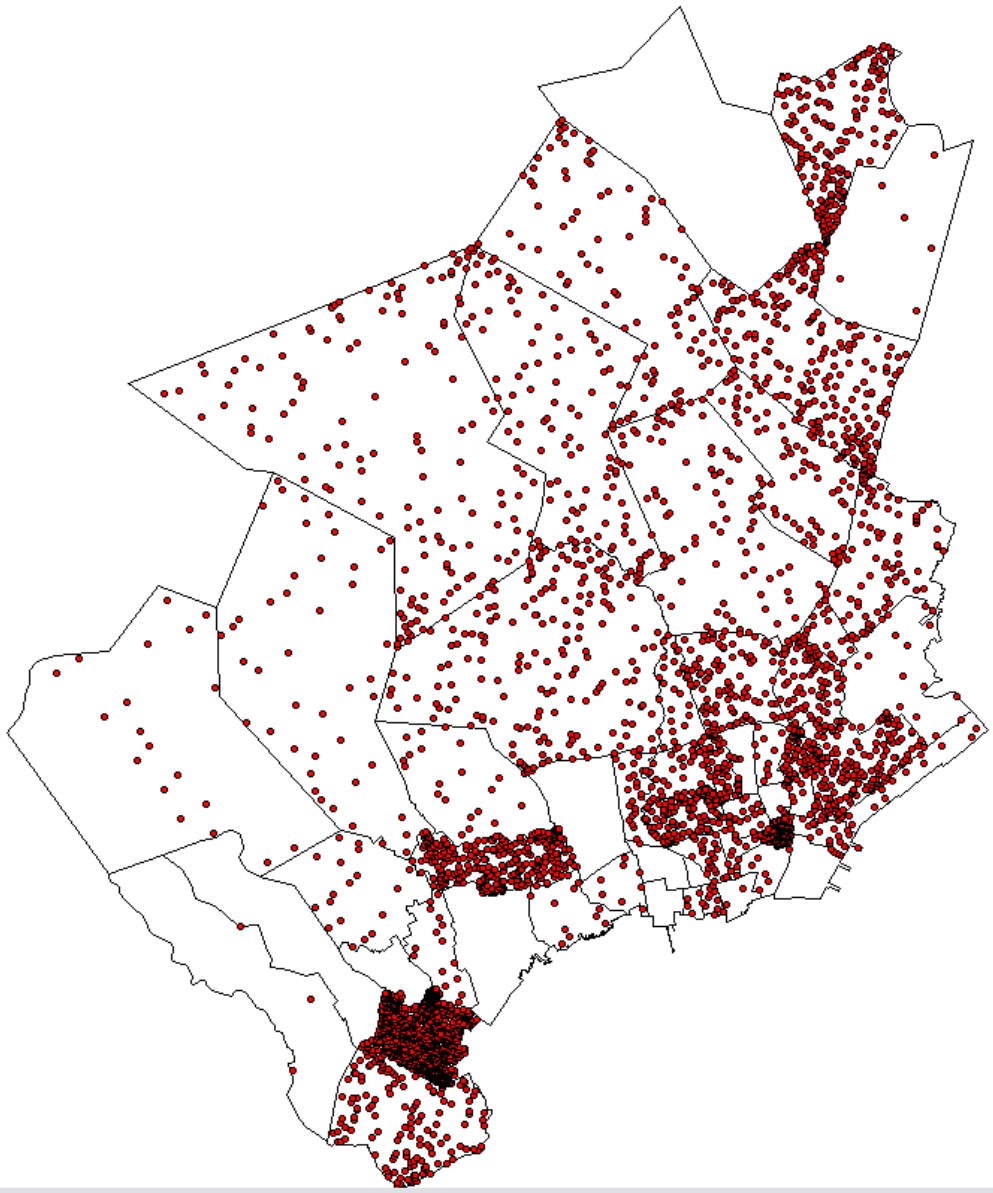
WRAIR: Walter Reed Army Institute of Research
USAMRID: United States Army Medical Research Institute of Infectious Diseases
VRC/NIAID: Vaccine Research Center, National Institute for Allergy and Infectious Diseases

Dengue Surveillance in Asia
Cell-Phone Based – SAGES (JHU-APL)



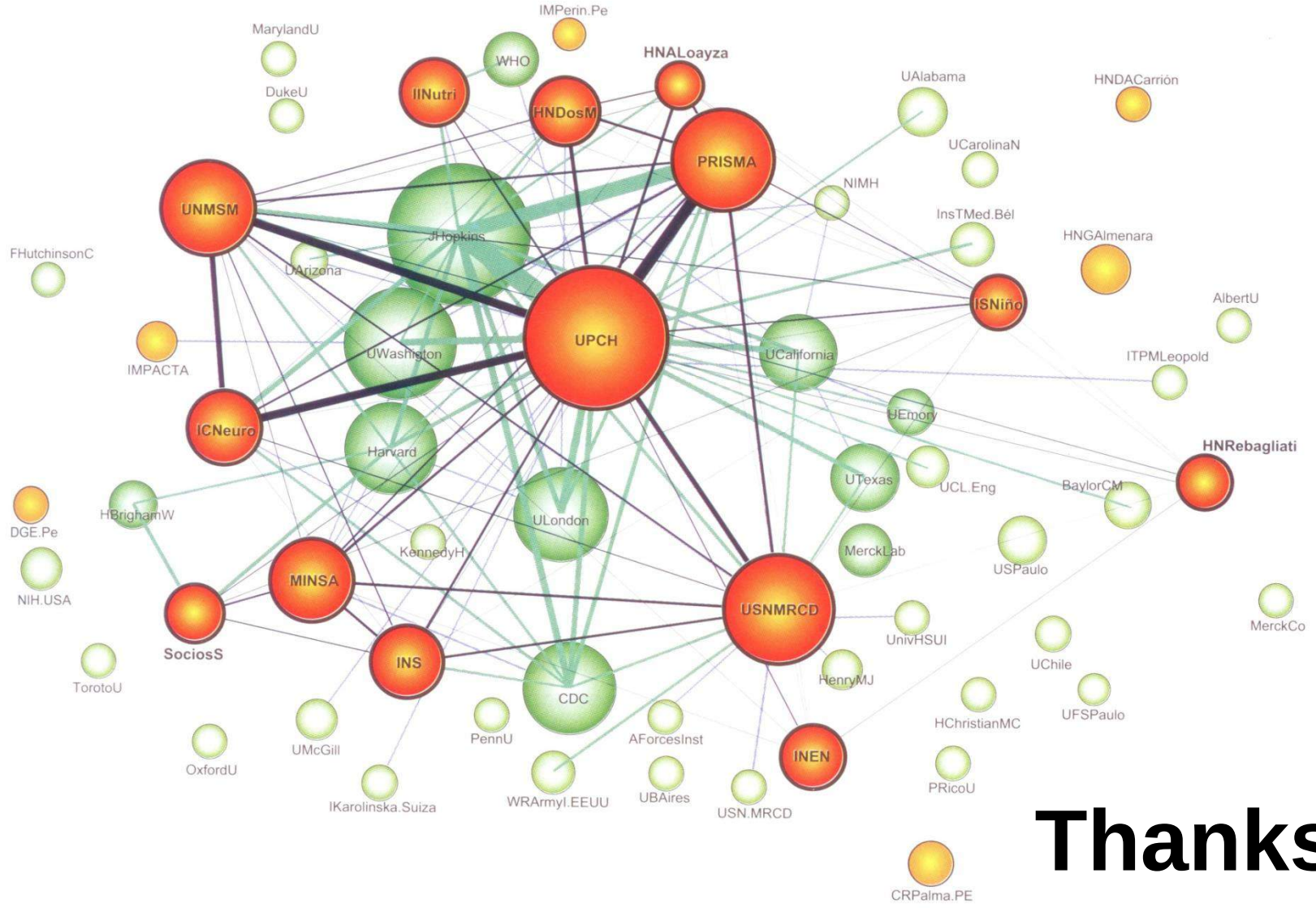
Epi Map

File Edit Shape (Boundary) Map Type View Help



Legend - EDECOUNT
1 Dot = 1

Scale 1:2217.3663 | X:594595.65 Y:1148929.50 | MapTips | 4:47 PM



Thanks!

Figura 5. Colaboración institucional en publicaciones con participación peruana en revistas ISI [CLINICAL MEDICINE] 2000-2009
Nota: se muestra las instituciones con más de diez publicaciones, en rojo-naranja las peruanas y en verde las extranjeras. Las líneas muestran el nivel de colaboración entre los nodos. Las líneas grises muestran las relaciones de más de diez publicaciones, en verde las de más de 15, y en azul de más de 20 publicaciones entre instituciones peruanas. El tamaño de los nodos es equivalente al número de publicaciones de la institución.

Rev Peru Med Exp Salud Publica vol.27 no.3 Lima July/Sept. 2010.

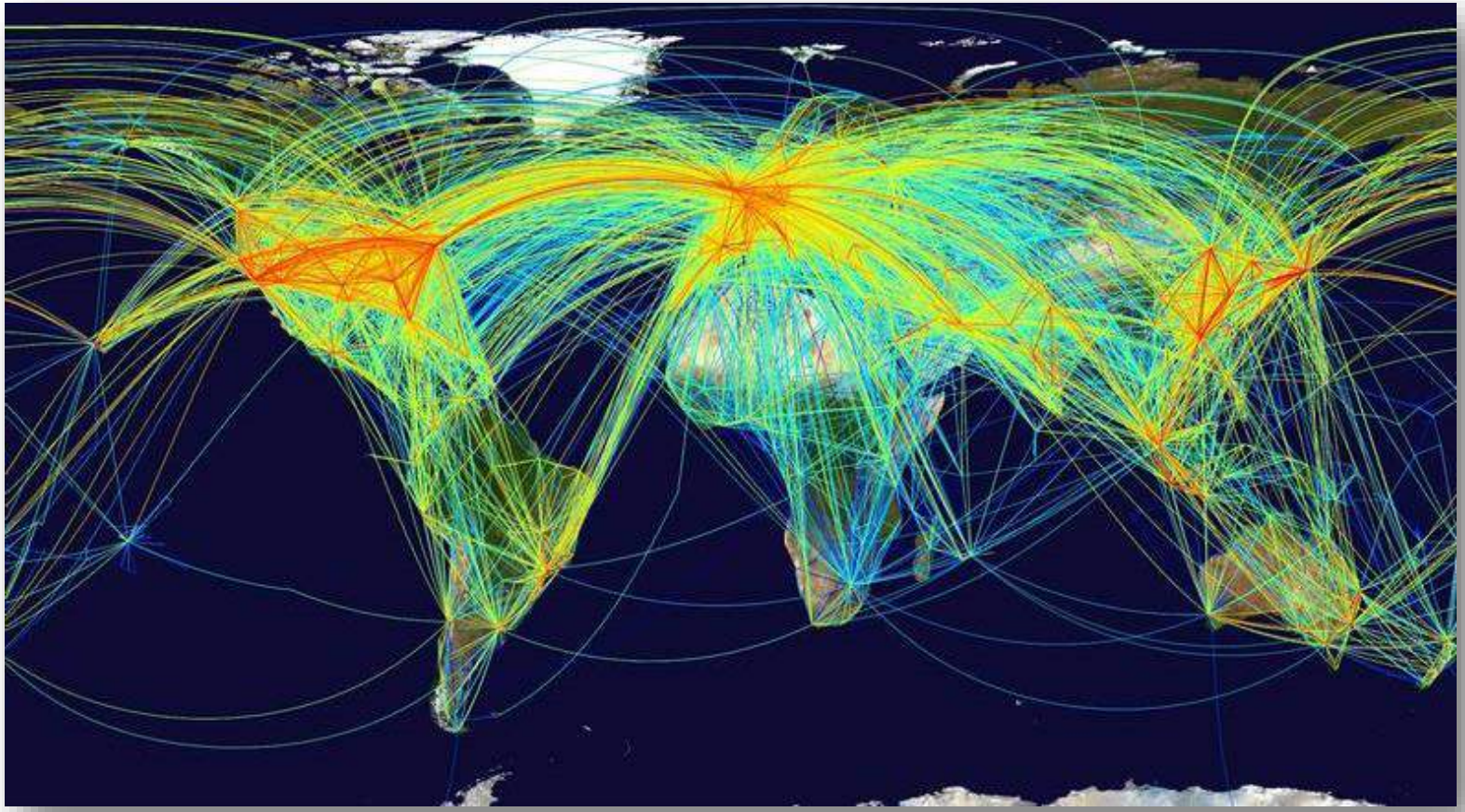
The Global Health Security Agenda and the West Africa Ebola Epidemic

Jordan W. Tappero, MD, MPH

Director, Division of Global Health Protection

Centers for Disease Control and Prevention

A Health Threat Anywhere Is a Health Threat Everywhere



The Lancet 380:9857, 1-7 Dec 2012, pp. 1946-55.
www.sciencedirect.com/science/article/pii/S0140673612611519

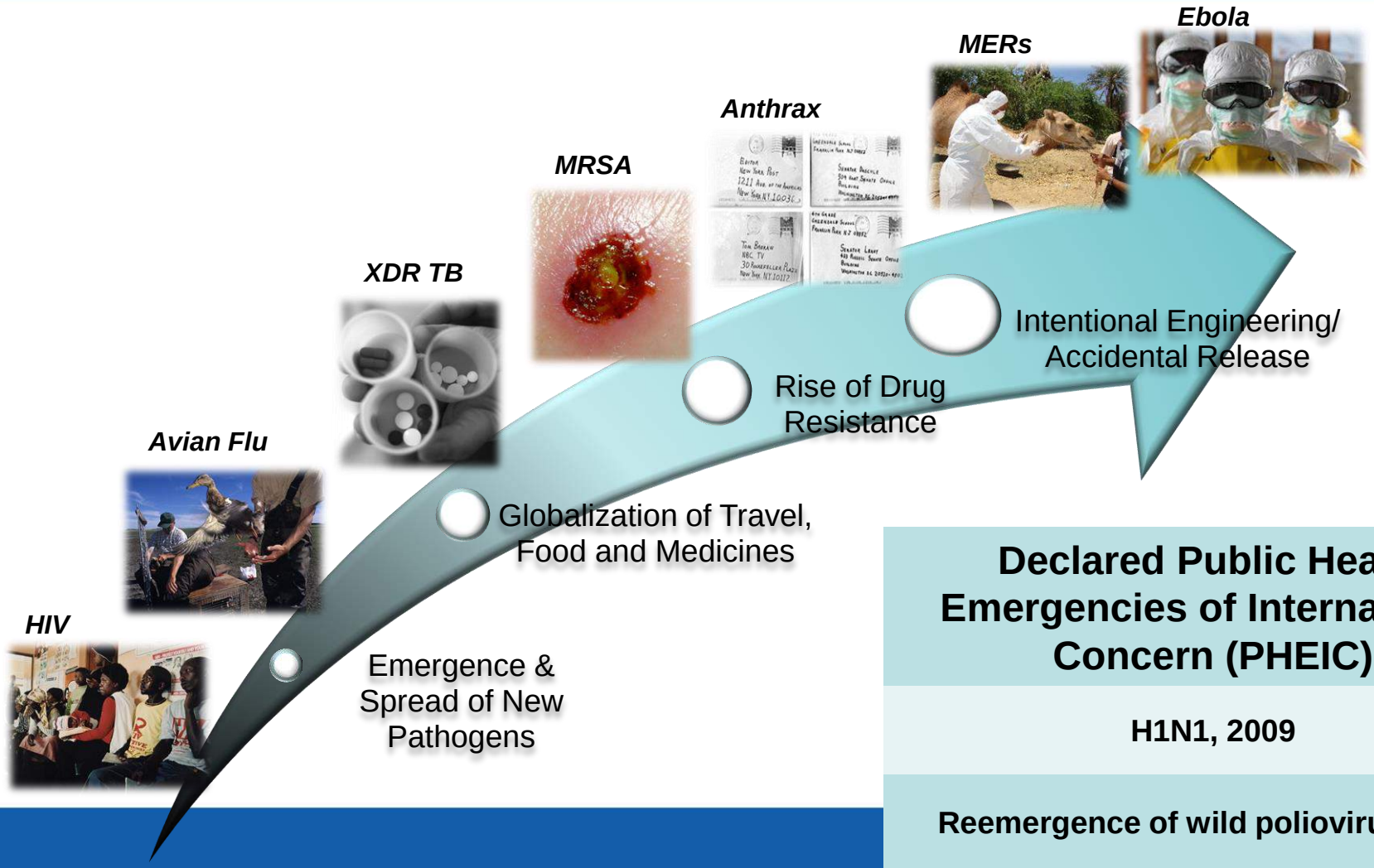
International Health Regulations, 2005

- The International Health Regulations (IHR) were revised in 2005 and are used by countries to prevent and control public health threats while avoiding unnecessary interference with international travel and trade
- All countries are committed to achieving the goals of IHR

International Health Regulations, 2005

- **Detect:** Ensure surveillance systems and laboratories detect potential threats
- **Assess:** Work together to make decisions about public health emergencies
- **Report:** Report through a global network of National Focal Points
- **Respond:** Respond to public health events

Public Health Threats



Declared Public Health Emergencies of International Concern (PHEIC)
H1N1, 2009
Reemergence of wild poliovirus, 2014
West Africa Ebola epidemic, 2014-present

Less Than 1/3 of the World is Prepared to Respond

- By 2012, about 20% of countries (n=42) had met IHR goals
- By 2014, about 30% of countries (n=64) were fully prepared to detect and respond to an outbreak

IHR: International Health Regulations

Report to the Director-General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation, November 2014

Why Care About Global Health Security?

PROBLEM

NOT PREPARED

Most countries are not prepared

DISEASES SPREAD

Faster and farther

ECONOMIC IMPACT

SARS: $40 Billion
Ebola: Billions

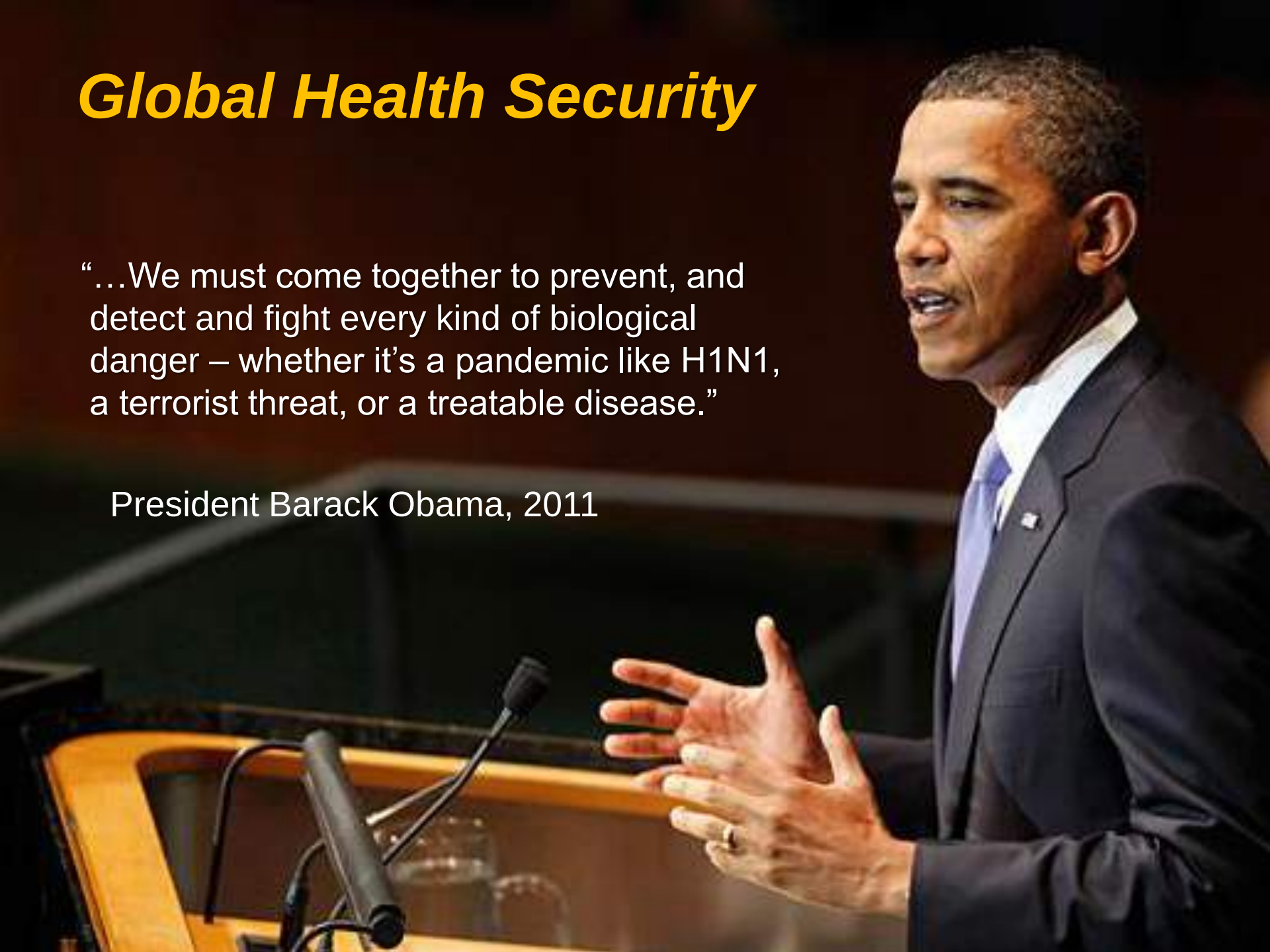
SARS: Severe acute respiratory syndrome

World Bank, www.worldbank.org/en/news/feature/2013/03/05/flu-outbreaks-reminder-of-pandemic-threat

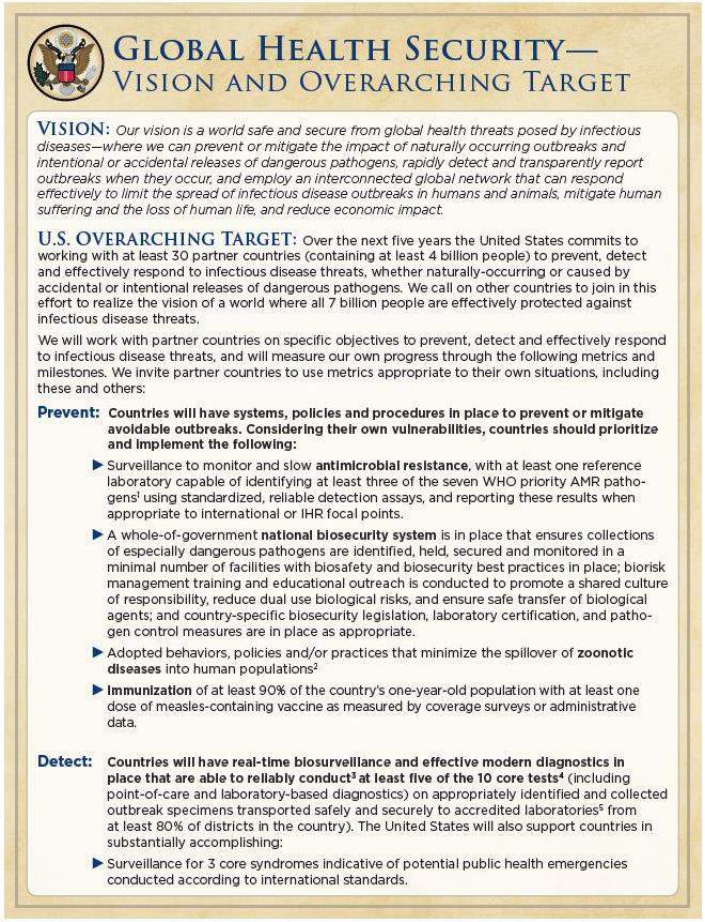
Global Health Security

"…We must come together to prevent, and detect and fight every kind of biological danger – whether it's a pandemic like H1N1, a terrorist threat, or a treatable disease."

President Barack Obama, 2011



Global Health Security Agenda (GHSA)



GLOBAL HEALTH SECURITY— VISION AND OVERARCHING TARGET

VISION: *Our vision is a world safe and secure from global health threats posed by infectious diseases—where we can prevent or mitigate the impact of naturally occurring outbreaks and intentional or accidental releases of dangerous pathogens, rapidly detect and transparently report outbreaks when they occur, and employ an interconnected global network that can respond effectively to limit the spread of infectious disease outbreaks in humans and animals, mitigate human suffering and the loss of human life, and reduce economic impact.*

U.S. OVERARCHING TARGET: Over the next five years the United States commits to working with at least 30 partner countries (containing at least 4 billion people) to prevent, detect and effectively respond to infectious disease threats, whether naturally-occurring or caused by accidental or intentional releases of dangerous pathogens. We call on other countries to join in this effort to realize the vision of a world where all 7 billion people are effectively protected against infectious disease threats.

We will work with partner countries on specific objectives to prevent, detect and effectively respond to infectious disease threats, and will measure our own progress through the following metrics and milestones. We invite partner countries to use metrics appropriate to their own situations, including these and others:

Prevent: **Countries will have systems, policies and procedures in place to prevent or mitigate avoidable outbreaks. Considering their own vulnerabilities, countries should prioritize and implement the following:**

- Surveillance to monitor and slow **antimicrobial resistance**, with at least one reference laboratory capable of identifying at least three of the seven WHO priority AMR pathogens[1] using standardized, reliable detection assays, and reporting these results when appropriate to international or IHR focal points.
- A whole-of-government **national biosecurity system** is in place that ensures collections of especially dangerous pathogens are identified, held, secured and monitored in a minimal number of facilities with biosafety and biosecurity best practices in place; biorisk management training and educational outreach is conducted to promote a shared culture of responsibility, reduce dual use biological risks, and ensure safe transfer of biological agents; and country-specific biosecurity legislation, laboratory certification, and pathogen control measures are in place as appropriate.
- Adopted behaviors, policies and/or practices that minimize the spillover of **zoonotic diseases** into human populations[2]
- **Immunization** of at least 90% of the country's one-year-old population with at least one dose of measles-containing vaccine as measured by coverage surveys or administrative data.

Detect: **Countries will have real-time biosurveillance and effective modern diagnostics in place that are able to reliably conduct[3] at least five of the 10 core tests[4]** (including point-of-care and laboratory-based diagnostics) on appropriately identified and collected outbreak specimens transported safely and securely to accredited laboratories[5] from at least 80% of districts in the country). The United States will also support countries in substantially accomplishing:

- Surveillance for 3 core syndromes indicative of potential public health emergencies conducted according to international standards.

- **A unifying framework to improve our global response to disease outbreaks**

www.globalhealth.gov/global-health-topics/global-health-security/Overarching%20Target.pdf

GHSA Launch, 13 February 2014

Vision: *A world safe and secure from global health threats posed by infectious diseases…*

- Focused leadership and political will
- 28 countries, WHO, OIE, and FAO
- By September 26, 2014: 44 countries joined the GSHA
- By June 2015, G7 committed to assist at least 60 countries

GHSA: Global Health Security Agenda OIE: World Organization for Animal Health FAO: Food and Agriculture Organization

Seoul Meeting, 7–9 September 2015

GHSA: Prevent, Detect, Respond

Prevent avoidable catastrophes

Detect threats early

Respond rapidly and effectively

The Global Health Security Agenda, www.globalhealth.gov/global-health-topics/global-health-security/GHS%20Agenda.pdf

Action Packages to Achieve Targets

Antimicrobial Resistance

National Laboratory Systems

Emergency Operations Centers

Zoonotic Diseases

Surveillance

Public Health and Law Enforcement

Biosafety/Biosecurity

Reporting

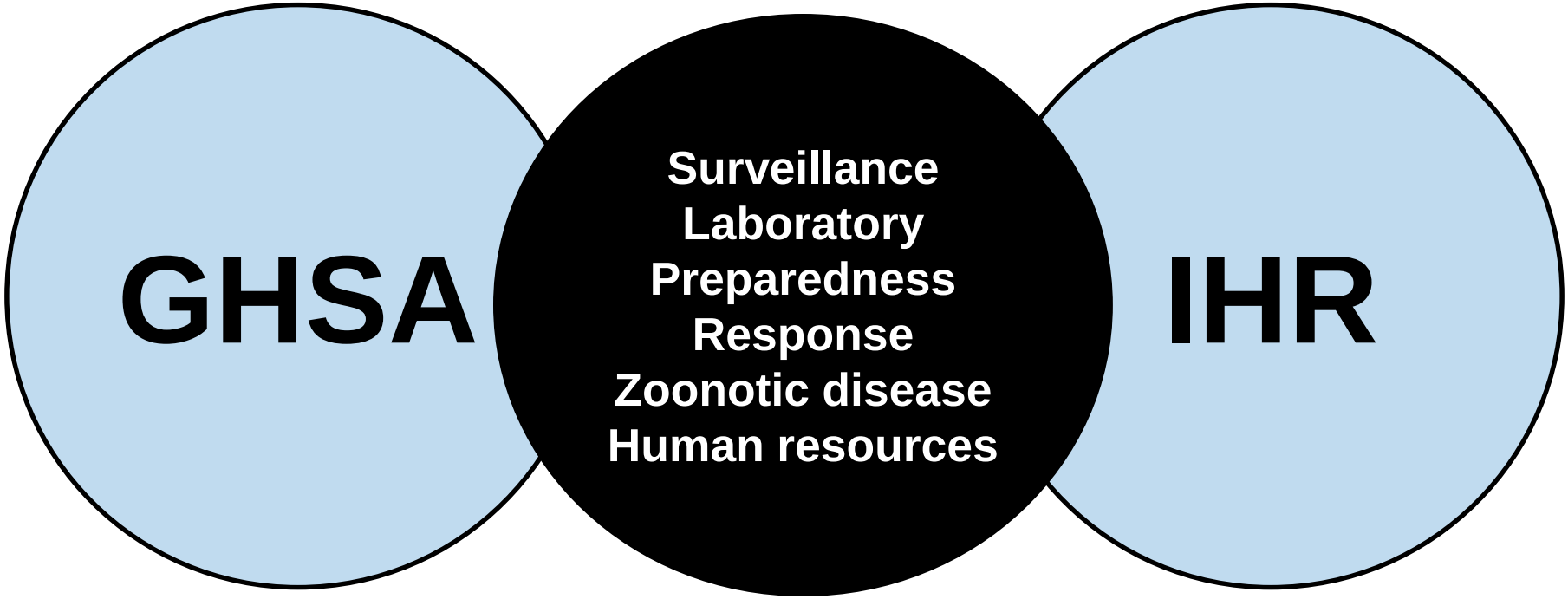
Medical Countermeasures

Immunization

Workforce Development

GHSA Action Packages, www.cdc.gov/globalhealth/healthprotection/ghs/pdf/ghsa-action-packages_24-september-2014.pdf

Shared Priorities: GHSA and IHR



GHSA: Global Health Security Agenda
IHR: International Health Regulations

Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. September/October 2014, 12(5): 231-238.

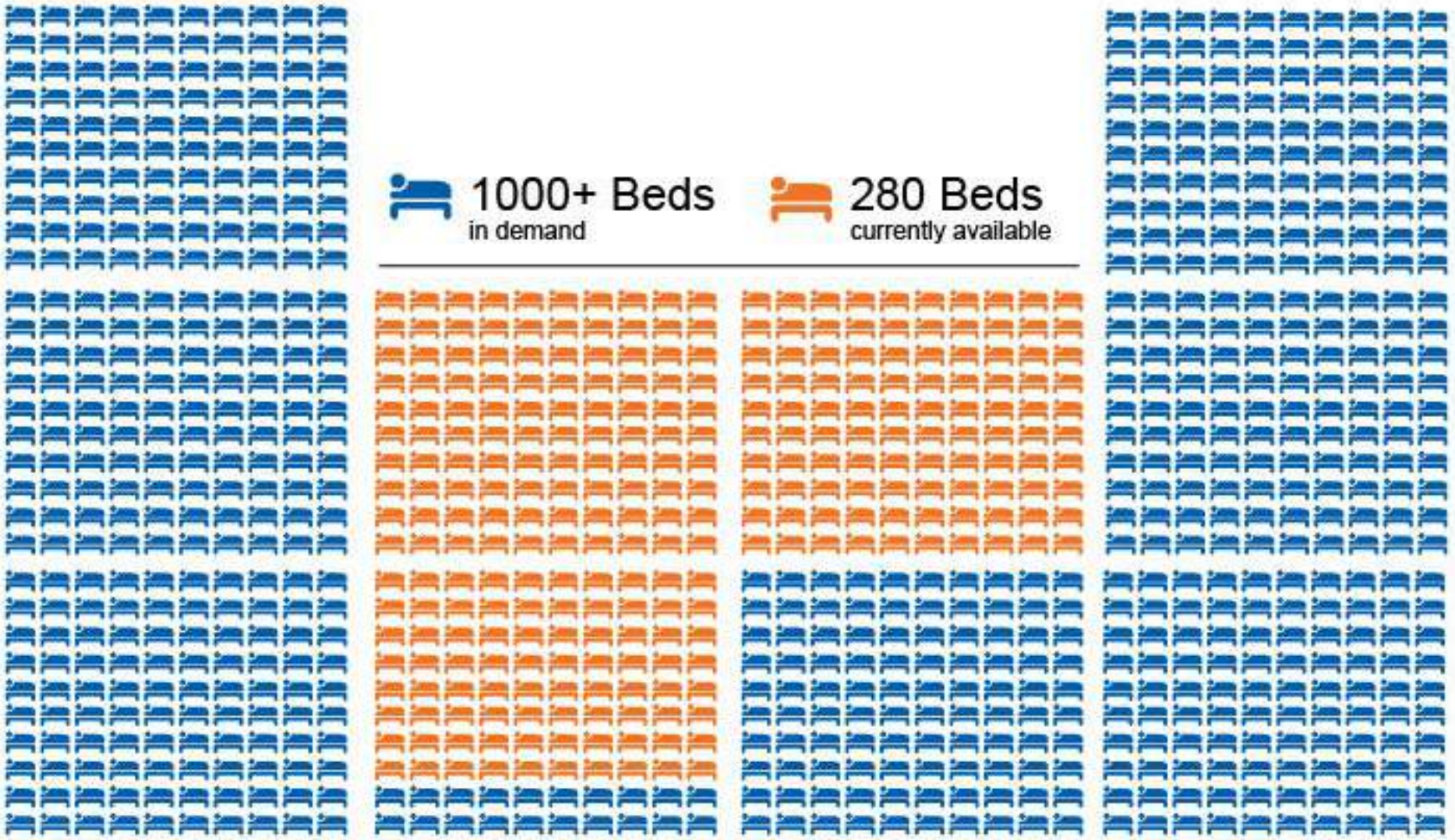
Ebola: A Perfect Example of Why GHSA is Needed

- First time in West Africa (first cases notified in March 2014)
- Weak public health infrastructure and spotty border control
- Lack of infection control in health care facilities: absence of protective gloves, soap, and running water
- Unrecognized cases of Ebola reached poor, crowded cities with global air transportation links

GHSA: Global Health Security Agenda

Getty Images

More Patients than Beds in Ebola Treatment Units



CDC unpublished data

Community Deaths

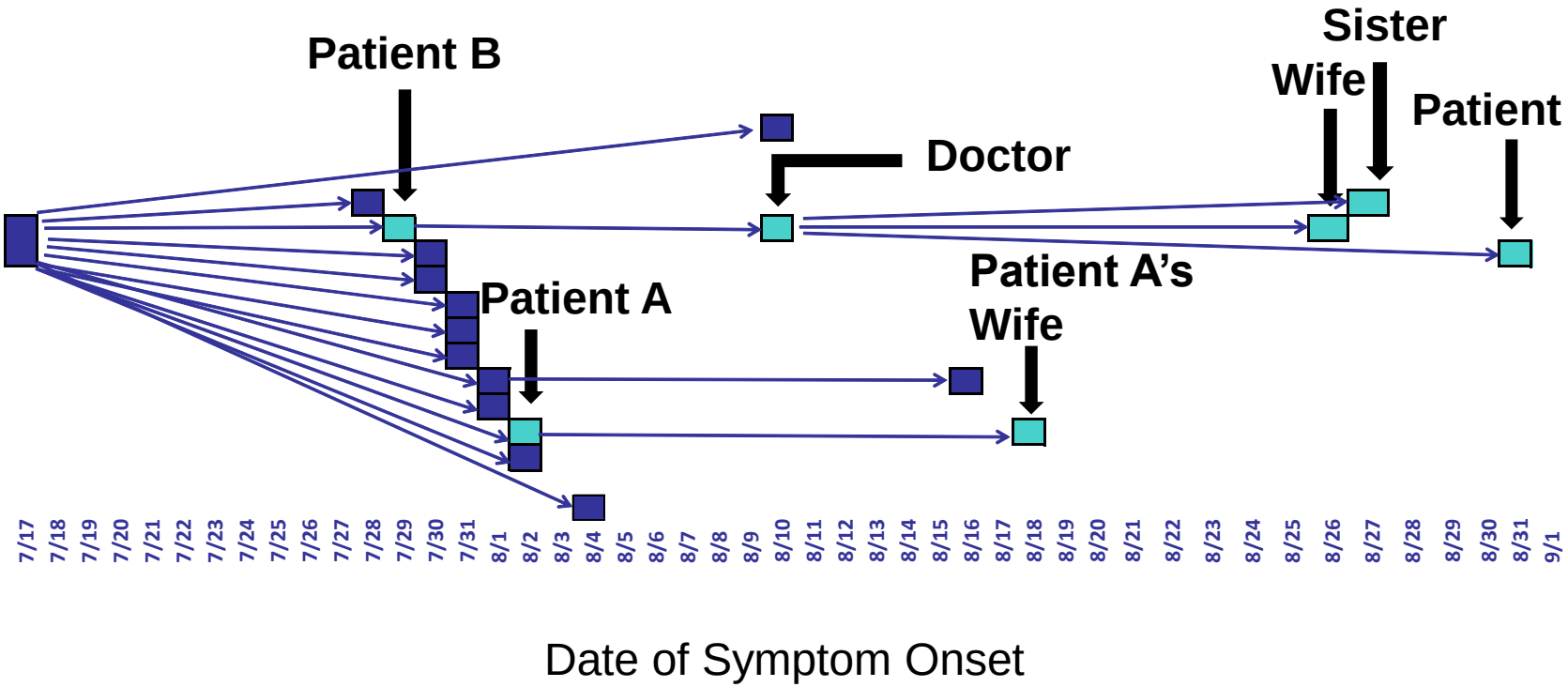
Christopher Black/WHO via Reuters

Associated Press

Rioting in Monrovia

Getty Images

Ebola Transmission in Nigeria, July–August, 2014



Date of Symptom Onset

Shuaib F, Gunnala R, Musa EO et al; CDC. MMWR Oct 3;63(39):867-72.

Nigeria Responds

- Nigerian FETP and EOC identified 894 contacts
- Completed nearly 19,000 contact tracing visits
- Implemented a social mobilization strategy that reached 26,000 households
- Established an ETU in just two weeks

FEPT: Field Epidemiology Training Program
EOC: Emergency Operations Center
ETU: Ebola Treatment Unit

i.infoplease.com/images/mnigeria.gif

Nigeria Succeeds

Ebola-free Nigeria hailed as 'success story' in battling outbreak

Children in Lagos, Nigeria, wash their hands with soap after being tested for signs of the Ebola virus on Oct. 8. (Sunday Alamba / Associated Press)

- **With only two GHSA features in place (contact tracing and surveillance, Emergency Operations Center), Nigeria was able to contain a potentially disastrous epidemic**

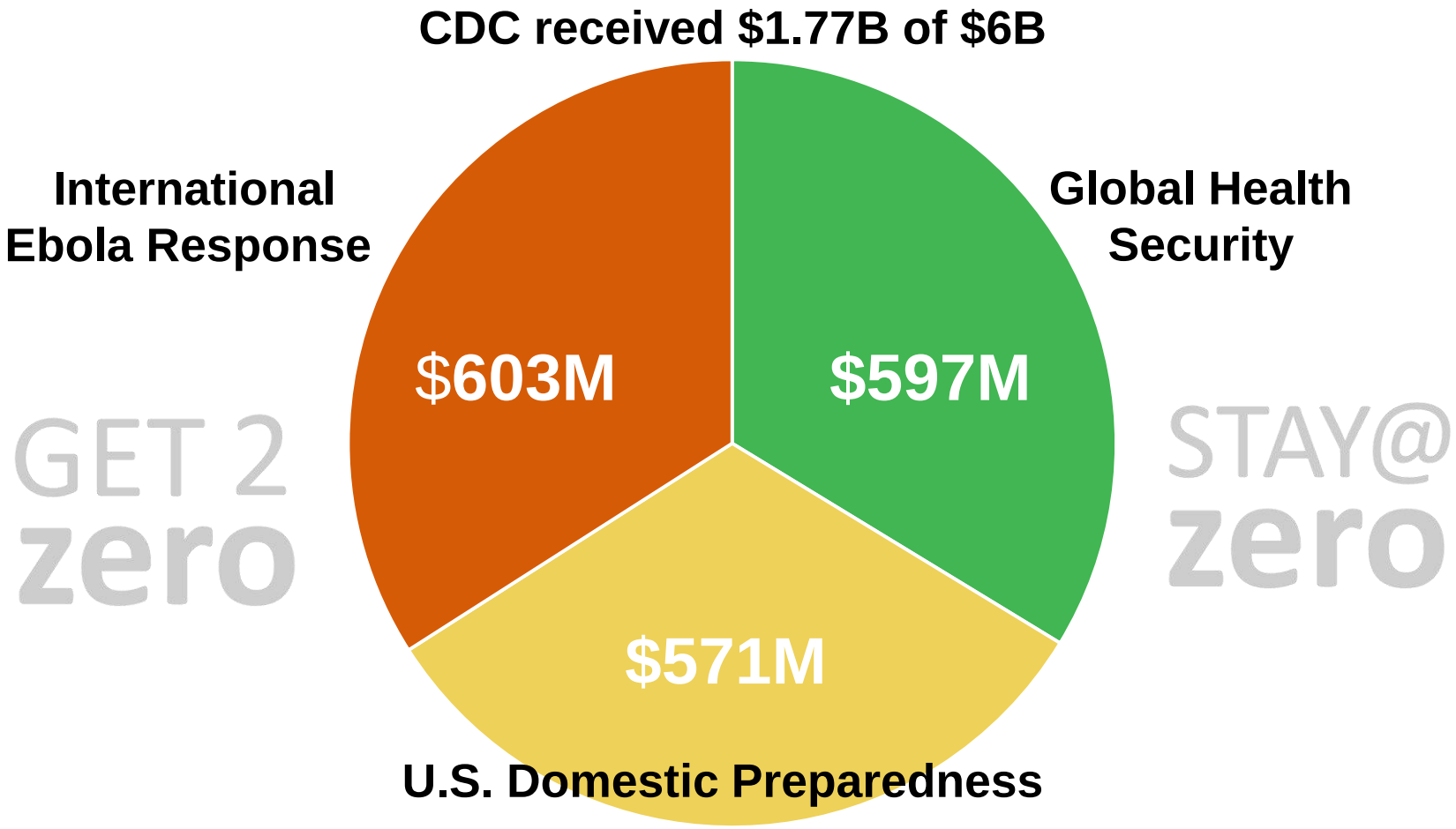
www.latimes.com/world/africa/la-fg-nigeria-ebola-20141020-story.html

Obama Meets with CDC

Treatment for Healthcare Workers

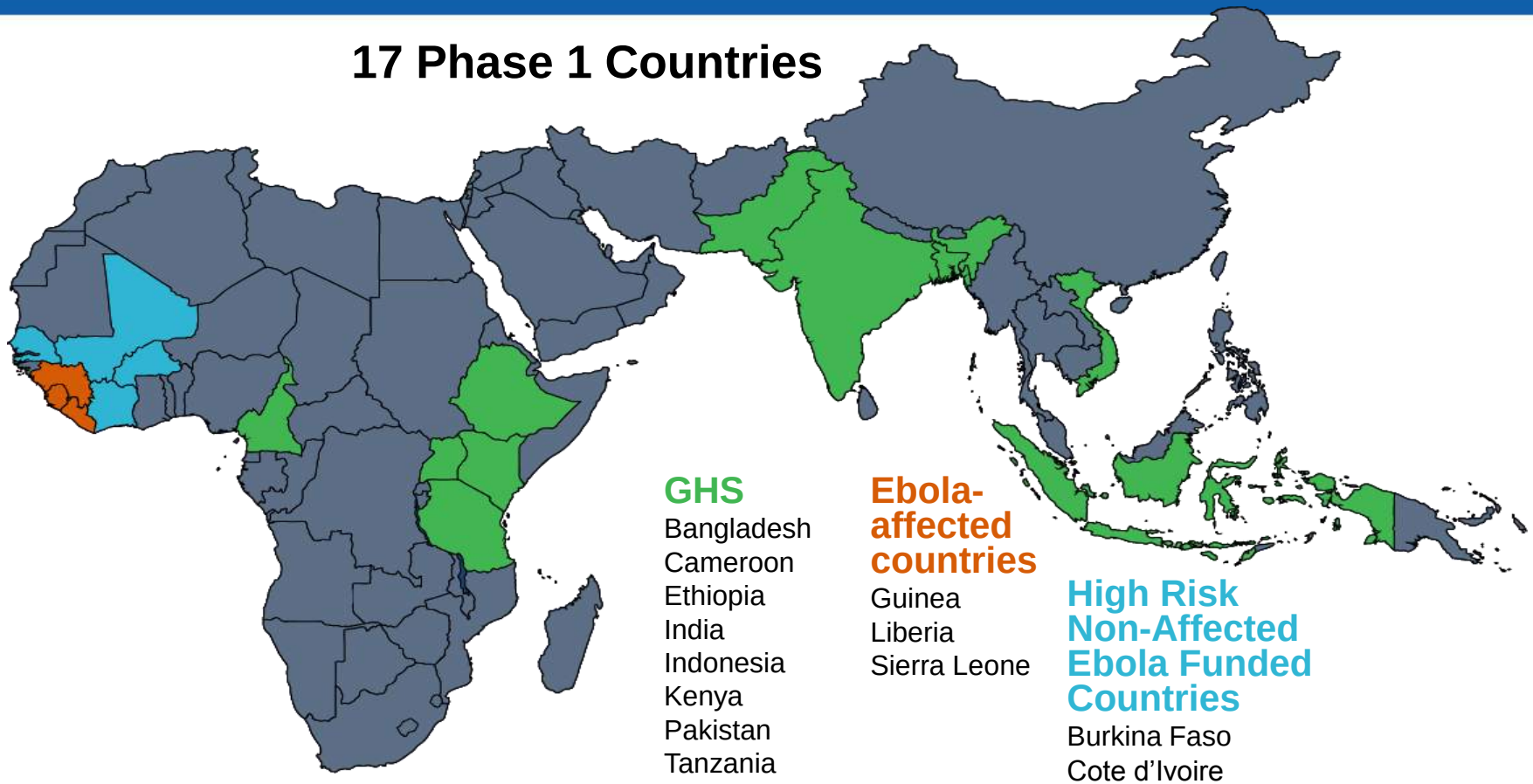

GET 2
zero

Emergency Funding, 2015–2019



CDC, stacks.cdc.gov/view/cdc/27784

U.S. Global Health Security Agenda Commitments, 2015



GHS: Global Health Security

Next Steps

- **2015**
  - Get to Zero, Stay at Zero, Build Back Better
- **Next 3–5 years**
  - Expand GHSA footprint to other at risk countries
- **By 2020**
  - United States to implement GHSA in 30 countries

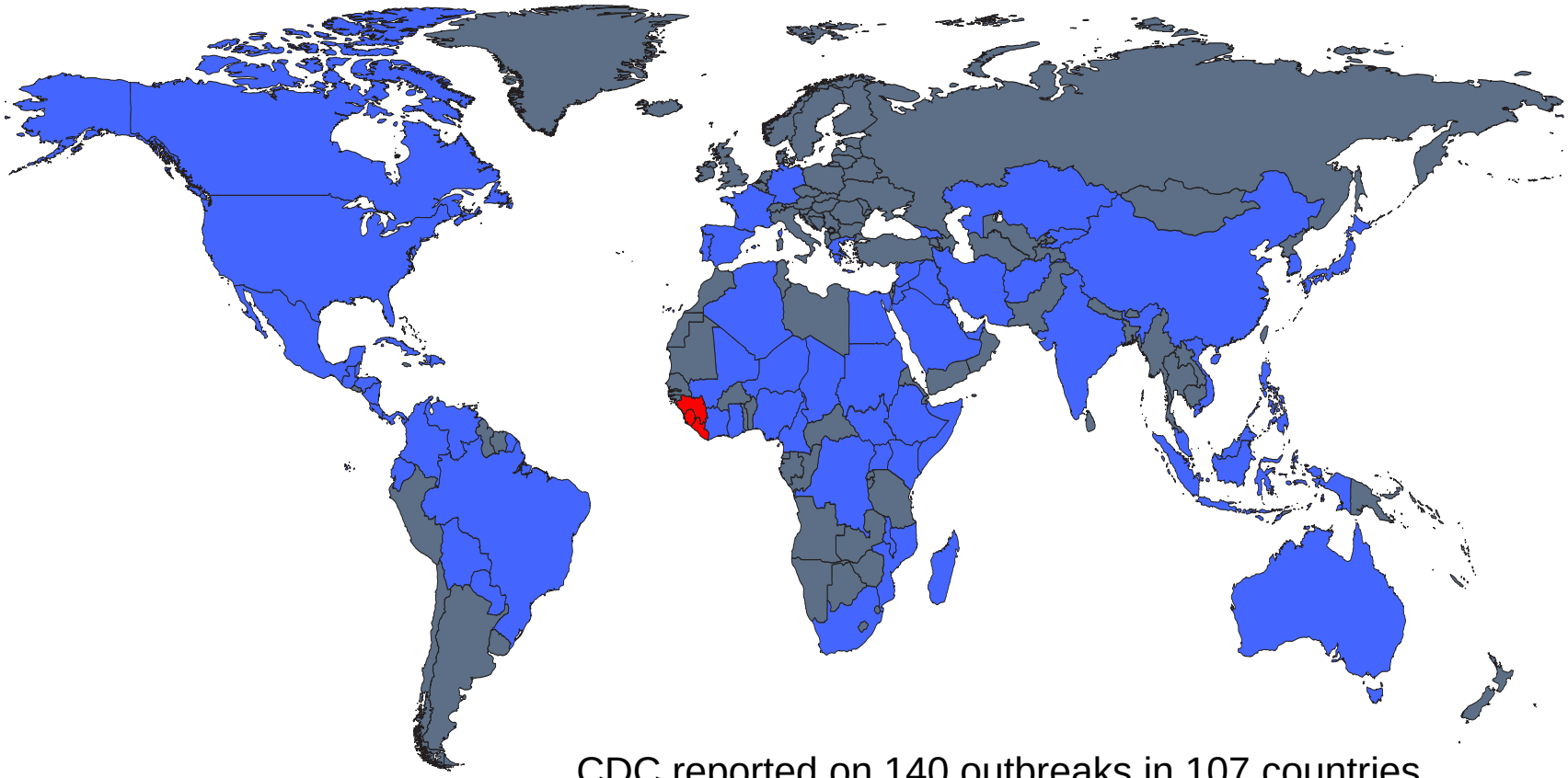
GHSA: Global Health Security Agenda

Global Health Security Agenda

"Together, our countries have made over 100 commitments… And now, we've got to turn those commitments into concrete action – starting in West Africa. We've got to make sure we never see a tragedy on this scale again…"

President Barack Obama
September 26, 2014

Global Outbreaks Monitored by CDC's Global Disease Detection Operations Center, March 2014 – July 2015

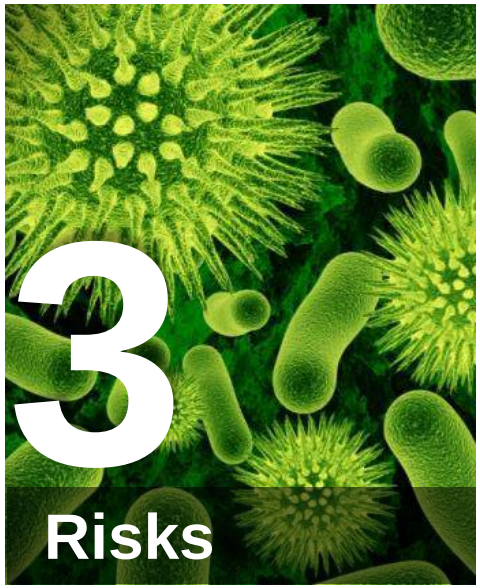


CDC reported on 140 outbreaks in 107 countries
March 2014–July 2015

Countries with infections disease outbreaks from March 2014 to July 2015 as reported by CDC Global Disease Detection (GDD) Operations Center

Ebola-affected countries

Global Health Security Agenda



- Emerging organisms
- Drug resistance
- Intentional creation

- Public health framework
- New lab and surveillance tools
- Successful outbreak control

- Prevent wherever possible
- Detect rapidly
- Respond effectively